

#TAG MacLaser.PCT

#CARD

## Laser Printer Companion

Table of Contents	Card #
1 Laser Printers	2
01 Inside Scoop	2
02 CX Maintenance	8
03 SX Maintenance	14
04 LX Maintenance	19
05 Making Toner	22
06 Ozone	23
07 Copier Care	27
08 PCmini Cleaning	33
09 Remanufacturing	38
10 Computers &Health	40
12 TowerFeed for Your Printer	41
13 Your Best Face	42
14 Laser Repair CX Fuser Roller	61
2 DTP	73
01 Rolling Your Own Part I	74
02 Perfectly Binding	75
03 Rolling Your Own Part II	76
04 Not Quite ReadySetGo 5	77
05 Rolling Your Own Part III	78
06 Self Publishing	79
07 ISBN Numbers	81
08 Library of Congress Numbers	82
09 Bar Code Software	83
10 Personal Publishing	84
11 The Eyes Have It	87
12 Going to Press	91
13 Self-Marketing	94
3 ComputerPhile	96
01 Used Laser Printers	97
02 Upgrading Your Laser, Xante	99
03 Data Management, Disk Compr	102
04 Ethernet Highway	107
4 Transfer Secrets	109
01 How Transfer Works	110
02 Getting Transferred	112

03 Tricks of the Trade	116
04 More Tricks of the Trade	124
05 Full Color Photo Transfers	127
06 Transfer Color Separation	136
07 Video Image Transfers	137
5 Environment	138
01 Home & Office Energy use	139
02 Circular File	140
03 Peanut Peanut	141
6 Eclectia	142
01 Book Nook	143
02 Craft Corner	145
03 Laser Checks	149
04 Paper Facts	151
05 Negative Images	152
06 Patent Pandemonium	153
07 Toner Resists Update	154
08 More Laser PCB's & Decals	155
09 Innovator Spotlights	156
Creation of a Tribute	157
West Topsham General Store	158
Woodstock Historical Society	159
10 Employee Spotlight	160
11 Government Watch	161
12 Machine Compatibility Chart	162
13 Anti-Trust Laws - You	164
14 OEM's Recycle!?!?	165
15 Copy Count Chart	166
16 Emerald Drums	167
7 Sponsors	168
Why BlackLightning	168
BlackLightning Catalog	169
Classic Clipart Collection Ad	197
Front Porch Computers Ad	198
Sugar Mountain Ad	199
Midnight Engineering Ad	200
Grantham Ad	201
Home Power Ad	202
Get Free Information	203
Classifieds	204

Mailing List	206
MMCC Ad	207
Earth Keeping Ad	208
Warning Flashbulb	209
How We Did It	210
About BlackLighting	211
About The Flash	213
Subscription Form	214
Resources	215

#ENDCARD

#TAG

#CARD

Chapter 1

Laser Printers  
Care, Feeding,  
and Maintenance

The laser printer is a wondrous tool that has revolutionized the way printed word is distributed. It is also a complex machine that needs proper care to perform at its best. With the right attention your printer will last for years and may give you a million or more pages.

#ENDCARD

#TAG C1S1P1.pct

#CARD

Chapter 1...

Inside Scoop  
How Laser Printers Work

by Holly Blumenthal of BlackLightning  
from The Flash volume 2, issue 2

As with artists who make their dancing and drawing look easy, the laser printer is a well engineered piece of machinery that makes an intricate, complex process happen consistently and smoothly. Here, we will look at the inner workings of the popular HP Series II laser printer. This machine is similar to most laser printers and the general principles discussed are applicable to both laser printers and photocopiers.

Life begins at the paper tray. The top sheet in the tray is picked up by rollers located at the end of the paper tray, inside the printer (Figure 1). These rollers are shaped like a flat tire, and are covered

with a textured plastic which helps grab the paper. From the paper tray, the sheet is passed through the machine by a series of rollers. This paper path passes under the cartridge to pick up the toner, and then through the fuser assembly where heat and pressure melt the toner onto the page. Finally, the copy emerges from the printer and comes to rest on the output paper tray.

#ENDCARD

#TAG C1S1P2.pct

#CARD

Chapter 1...

As the paper begins its journey, the cartridge drum is being prepared for the developing process. This means not only cleaning off any residual toner, but also clearing the cartridge drum surface of electrostatic charges. Electrostatic charges are a critical part of the laser printing process. The voltage and type of charges involved vary widely from machine to machine. Thus, the many different types of toner available. For the simplicity of explanation, positive and negative signs are used in this article with no specific voltages. The cartridge drum is specifically designed to receive charges. The outer layers of the drum are an Organic PhotoConductive material. Hence the name, OPC drum. This photosensitive layer becomes electrically conductive when exposed to light (2.b), much like the solar cells used in many calculators. Beneath this is an aluminum substrate.

#ENDCARD

#TAG C1S1P3.pct

#CARD

Chapter 1...

Inside the printer is an eraser lamp, which shines through a slot in the top of the cartridge onto the OPC drum (Figure 3). This lamp clears the drum of any previous electrostatic charge, providing a "clean slate" (2.a). The drum of the cartridge rotates constantly during the printing process, exposing the entire surface of the drum to the eraser lamp as well as the rubber wiper blade, which sweeps excess toner from the drum into the waste reservoir. This wiper blade eventually wears fine grooves into standard OPC drums because they are made of a soft acrylic. The grooves then carry excess toner that shows up as black marks on the printed page. This is why the super hard polycarbonate surface of the Emerald OPC drum results in better print quality and a longer life.

#ENDCARD

#TAG C1S1P4.pct

#CARD

Chapter 1...

The clean discharged drum surface passes under the corona wire in the cartridge. This corona wire applies a uniform negative charge

onto the drum surface. It is something like painting a canvas with a white wash -- a uniform, negative, electrostatic charge. Dirt on the corona wire can prevent the charge from being uniform and result in black smears on the final output.

At this point, the drum is ready to receive the image. The printer's laser beam is reflected off a rotating, six-sided mirror, and directed down to the drum surface through a slot in the cartridge case. The laser printer translates the digital image from the computer into a sequence of on/off instructions for the laser beam. The laser can turn on and off at a rate of 30,000 times per second. Where ever the laser beam light is focused, the electrostatic charge on the drum surface becomes more positive (Figure 2). The white wash was a negative charge, the new image is more positive. This is called the electrostatic image (Figure 4). The positive charges of this example will pick up the toner, as we will soon see.

The "ink" of the laser printer is actually a very fine powder called toner. The primary components of toner are plastic, sand and rust. Toners have an electrostatic charge. Between the toner reservoir and the drum of the cartridge is the developer roller (Figure 3). The developer roller has a magnet inside it which attracts the already charged toner and increases the strength of the toner's charge. The doctor blade, located just above the roller surface, is adjusted to allow the correct amount of toner to be passed onto the drum. This adjustment is referred to as the "gapping", and it controls flow and charging of the toner.

The electrostatic image of our example is a positive charge. The toner is negative. Opposites attract; thus, toner is drawn to the drum, changing the electrostatic image into a picture that can be seen on the drum surface (Figure 4).

#ENDCARD

#TAG

#CARD

Chapter 1...

The paper is now passing under the cartridge and over the machine corona wire (Figure 3). The corona wire in the machine applies a strong positive charge through the paper. This pulls the negatively charged toner down off of the drum and onto the sheet. The image can now be seen on the page. Don't sneeze; the powdery toner is only lying in place on the surface of the paper as it passes over the paper guide. Sometimes, when the machine jams, it is necessary to open the top and remove the partially printed paper. You can easily smear the image on one of these pages.

Next, the paper passes between the two rollers of the fuser assembly which is located beneath the fuzzy green cover that says "Warning High Temperatures". The top roller of the fuser assembly has a high intensity heat lamp in it which heats the roller to approximately 300 degrees Fahrenheit. The lower roller is the pressure roller (Figure 1).

The combination of heat and pressure melts the toner onto the sheet. The fuser wand has a specially oiled felt which lubricates the fuser rollers and cleans the top roller of paper dust and toner. The printed sheet emerges from the fuser assembly.

That is the completion of the paper's expedition. The gears, electronics, computer interpretation, mirrors, lasers, toner resins, heat and pressure all combine to work as an intricate, synchronized whole. With this well conducted orchestration of events, the image prints smoothly and easily.

#ENDCARD

#TAG C1S2P1.pct

#CARD

Chapter 1...

CX Maintenance

Care & Feeding of Your

Series I Laser Printer

by Walter Vose Jeffries of BlackLightning  
from The Flash volume 1, issue 1

Laser printers have become an integral part of many computer users' lives. They typically perform flawlessly; printing crisp copy day after day with nary a thought to maintenance or cleaning by their users. But, a day without your laser printer, when you need to print that critical report, is like a day without sunshine.

Laser printers are low maintenance machines, but they can get quite dirty from paper dust and spilled toner as well as from dust in the environment. A clean machine will produce better output, remain trouble-free longer and is relatively simple to clean. Let's take a look at cleaning the original Apple LaserWriter and LaserWriter Plus, HP LaserJet Series 1, QMS KISS, QMS PS-800, all based on the Canon CX laser print engine.

#ENDCARD

#TAG C1S2P2.pct

#CARD

Chapter 1...

First, a quick introduction is in order. The diagram on the previous page shows some of the key components of the LaserWriter. Start by opening the machine by gently but firmly pulling up on the release lever as indicated by the black arrow. Let's jump into the most critical part of the cleaning process.

With the printer lid open, look in the upper part of the printer above where the cartridge handle is normally located. There are two filters here that often become clogged, resulting in the machine overheating. This can cause blurred letters and graphics on your printed copy. They can be cleaned gently with a vacuum or a cloth.

Find the silver-colored rectangular well next to the black plastic ridged paper path in the center of the machine. It is criss-crossed by very fine wires. These are the printer corona and transfer wires. Using a cotton swab moistened with alcohol gently wipe each of the wires (Figure 2). The corona wire is the barely visible long wire under the short, diagonally crossed transfer wires. This should also be cleaned. Be gentle, they are fragile and expensive to replace. Signs that the corona wires need cleaning are white patches or vertical streaks, like drips of paint, on your printed copy. In this case, you should also clean the corona wires in the cartridge (more later). Caution: do not clean the printer corona wires with the cartridge corona wire cleaner. This will dirty the tool excessively, and reverse its intended usefulness. Once it is dirty it will only make the cartridge corona wires dirtier. When used for its intended purpose, it does not get very dirty.

If a large amount of toner builds up in the well, a vacuum cleaner is the best way to get it out. Again, be careful with the fragile wires.

Wipe the transfer guide with a barely damp cloth. This is the bronze-colored plate you will see behind the transfer wire when you open the printer. Pay especially close attention to the space below the top plate.

#ENDCARD

#TAG C1S2P3.pct

#CARD

Chapter 1...

The Fuser wand is the black plastic wand with the fuzzy green handle. The felt strip on the bottom cleans the fuser rollers which bind the toner to the paper with heat and pressure. Check the white felt of the fuser wand for buildup of residue. If it is excessively grimy, gently scrape the crust into the trash with the edge of a paper clip or similar firm edge. If this does not help, the wand needs to be replaced. The wand is vital for the proper operation of the laser printer and should be replaced whenever the cartridge is changed. Extra wands may be purchased from dealers and toner cartridge remanufacturers.

The separation belt (Figure 3) is a 3-inch-long clear plastic strip that guides the paper and prevents jamming. It is located on the opposite side of the machine from the release lever. It attaches to a peg on the surface of the transfer guide, threads over one roller and under the other, and hooks onto a thin, metal peg above the paper path. This peg is directly across from where the green corona wire cleaner for cartridges is stored. Replacement separation belts are typically stored between the corona wire cleaning tool and the edge of the machine. If your machine starts jamming a lot, the separation belt may be broken. You may purchase them from your cartridge supplier.

#ENDCARD  
#TAG C1S2P4.pct  
#CARD  
Chapter 1...

You can tell if the separation belt is dirty just by examining the belt itself. A black smudge on the right side of the page means the separation belt may need cleaning. To clean it, detach the end loop from the metal peg by pulling it gently to the left about two millimeters. Hold that end with one hand and lift top roller off the belt. With your other hand grasp the top of the belt between thumb and forefinger. Gently draw the belt through this delicate “pinch-hold” a few times to clean off any toner smudges. Still holding the end loop, thread it back through the rollers and hook it on the peg. This requires a little dexterity, and may take some practice before you feel completely comfortable with it. If you use a dampened cloth or cotton swab to clean the separation belt, be sure only to use water. Alcohol or solvents may damage the plastic.

Vertical black lines on your printed copy indicate that you need to clean the toner cartridge’s corona wires as shown in Figure 5, below. These lines may vary from occasional pencil thin marks to uneven “drops of paint” smeared down the page. Characteristically, they do not appear in the same place on every page.

#ENDCARD  
#TAG C1S2P5.pct  
#CARD  
Chapter 1...

Remove the cartridge from the printer. Hold it flat, as in Figure 5, to avoid spilling toner. Use the green cartridge corona wire cleaning tool which is stored inside the printer near the latch.

Insert the corona wire cleaner finger into the long slot on top of the cartridge with the tooth away from the handle. The cleaner fits in easily this way and does not work at all if reversed, so you’ll know right away if you’ve placed it correctly. Pop the tool into place, moving it all the way in until the plastic tool meets the body of the cartridge. You will not damage anything. The flexible plastic film that moves to the side is to protect the drum from light. Slide the tool lengthwise six times as illustrated below, then gently remove it. It may “poing” on removal, but this should not hurt the wire. If the corona cleaning tool looks dirty, it can be cleaned gently with a vacuum.

#ENDCARD  
#TAG  
#CARD  
Chapter 1...

Stains on the back of a page indicate that the paper path may



need cleaning. Wipe it with a tissue or soft, barely damp cloth. Be careful of the fine teeth near the corona wires which can catch your cleaning cloth. These stains could also be a symptom of dirty fuser rollers. The fuser rollers are located under the fuzzy green cover near the paper output tray. Clean them with a barely damp cloth, "pinching" off whatever dust you have wiped up at the end of the roller. Dry them with a clean cloth. Cleaning may also be done with a clean dry cloth, if the roller is not extremely dirty.

Careful of the fuser roller area -- it is hot. The green felt cover diffuses the heat fairly well, but the rollers are uncomfortably hot and could burn you.

Dirty marks on the edges of the paper are almost always caused by a dirty paper tray area. The last area to clean is the paper path under the machine. Start by removing the paper tray and wiping it out. Next, wrap a bit of cotton cloth around your fingers, or use a cloth glove, reach into the paper tray slot under the machine, and wipe all the surfaces down. Move to the other side, open the back door to the paper path and clean the ridged surfaces of the paper path. Reach in further and wipe the paper feed cams.

By giving your laser printer a regular basic cleaning, you will maintain the high quality of the output that your machine was designed to produce. A little preventive maintenance can go a long way and save you from future trouble.

### Cartridge Shelf Life

BlackLightning cartridges have a shelf life of over one year. Store them in a clean dry area between 0°F and 95°F in their original sealed packaging. Do not store cartridges where the humidity is high or there are abrupt temperature changes. Avoid exposure to corrosive fumes such as ammonia, benzene, and salt air or direct sunlight which may damage the drum

### Don't Throw Away Your Used Cartridges!

Even if you don't have your toner cartridges remanufactured, you can still save money. Buy your new cartridges from BlackLightning at our low prices and sell us your empty toner cartridges for even greater savings! We stock many types of new cartridges as well as our own remanufactured cartridges. Call us at 1-800-BLACK99 for more details and pricing.

### Squeaky Clean

Cartridge corona wires should be cleaned before inserting the cartridge. Handling during shipment, or changing cartridges (ie. for colors, transfer, etc.) can cause the toner to stick to the corona wires. This can cause black streaking on the page. New cartridges are as susceptible to this as remanufactured ones. To clean the corona wires, see the instruction sticker on the cartridge body, or refer to any of the machine cleaning articles in the Laser Printer Section. Canon SX, CX, and PC based machines come with a special tool for

cleaning cartridge corona wires. The EP-L cartridge does not have a corona wire..

#ENDCARD

#TAG C1S3P1.pct

#CARD

Chapter 1...

SX Maintenance

Care & Feeding of Your  
Series II Laser Printer

by Holly Blumenthal of BlackLightning  
from The Flash volume 1, issue 2

The Series II laser printer allows its users to effortlessly print out sharp, beautiful graphics and text. It's easy to become accustomed to this convenience, but when the printer develops ideas of its own, and draws lines or splotches where you never intended them, it can be more than a minor inconvenience. Some basic maintenance, and knowledge of potential trouble spots, can help ensure consistent, clean copy and increase the life span of the machine.

#ENDCARD

#TAG C1S3P2.pct

#CARD

Chapter 1...

The Series II laser printers, including Apple's LaserWriter II family, Hewlett Packard's LaserJet Series II, QMS PS810 and many others, are low maintenance machines. By the nature of their use, paper dust and toner residue will dirty the machine. There are numerous laser printer cleaning kits on the market which sell for \$20 or more. Our R&D department has looked into these products only to find that they are no better than a few inexpensive items that can be found at a local drug store. These basic supplies include Q-tips, cotton balls or a soft cloth, isopropyl alcohol, and water. Cleaning supplies should be stored near the laser printer and be easy to access. Once you are familiar with the Series II laser printer, it is easy to periodically check and clean it.

Use the diagram on the previous page to familiarize yourself with the basic components of the Series II machines. Turn off the laser printer before you begin. The button on the top right-hand corner of the printer opens the machine. Push this gently and firmly, allowing the button to slide toward you and then down. Look into the machine to familiarize yourself with the key components of the Series II laser printer: fuser assembly, cleaning tool, paper guide, filter, printer corona wires, discharge pins, transfer guide, lock key, and density dial.

The fuser assembly is easy to locate. It contains the fuser wand and roller. At the back of the machine, there is a large green cover with the words "Warning High Temperature". Below this cover is the fuser wand. To remove the wand, lift the cover and grasp the centered fuzzy green handle and lift up. Just below where the wand rests is the fuser roller. Dust particles and toner residue build up on this roller. Gently clean the fuser roller with a cotton ball or a Q-tip, being careful not to scratch it. It is best to try to pick up the dirt, so that it does not fall back into the machine. We do not recommend using the white square felt on the ends of some fuser wands, as shown in laser printer manuals, because it is more difficult to pick up residue using this method. You are more apt to spill it back into the machine where it will build up, possibly causing problems later. For additional access to the roller, lift the smaller green "back door" located just behind the main fuser assembly lid. In the body of the back door are paper separation claws which need to be wiped.

A dirty fuser wand may cause vertical streaks down the paper, smearing the print. If the wand has toner caked along the edge, you should get a fresh one. Fuser wands can be purchased from a dealer or remanufacturer. In a pinch, you can clean the felt by scraping it with the edge of a paperclip.

In front of the fuser assembly is the wide black ridged paper guide. Simply clean it with a cotton ball or soft cloth slightly dampened with water. If the back of your paper is dirty, this may be the culprit.

Just to the right of the paper feed, there is a black hole in the wall of the laser printer. Inside this hole is a filter. Clean the filter gently with a vacuum, soft cloth or toothbrush. If this filter becomes clogged the printer will overheat and the filter may need to be replaced.

Symptoms of a clogged filter are blurred print, toner bleeding through the paper, abnormally crusty fuser wand build up and a burning smell from the machine. It is also important to keep the area around the laser printer clear, to allow adequate airflow to the vents. The printer transfer wires are just in front of the paper feed guide. These wires are very fine strands running diagonally across a silver well. There is also a long, fine corona wire running just below the short diagonal transfer wires (Figure 2). Dirty wires may cause white patches, vertical streaks or light copy. These wires can be carefully cleaned with a Q-tip slightly moistened with isopropyl alcohol. Avoid getting any alcohol on the rollers or plastic parts. Be gentle, these wires are fragile and costly to replace. At each end of the well is an orange pad that can also be wiped off with a Q-tip.

#ENDCARD

#TAG C1S3P3.pct

#CARD

Chapter 1...

Between the corona wire and paper feed there is a row of discharge

pins. You can use the brush part of the cleaning tool to wipe off the pins. Again, be careful of the corona wires as you do this. Next to the transfer wires is a chrome-colored bar called the transfer guide. Wipe this bar with a slightly damp soft cloth or cotton ball. In front of the transfer guide is a centered green handle. This is the handle of the lock key which you can lift up. Wipe off any paper dust on the plate below. While cleaning your transfer guide lock key, note the dial to the left. This is the density dial, used to adjust the darkness of your print.

Close the lid and wipe off the paper tray with a soft cloth or cotton ball. This will help keep your paper crisp and clean.

#ENDCARD

#TAG C1S3P4.pct

#CARD

Chapter 1...

Care of the cartridge is also very important. Store spare cartridges in a dry, dust-free, cool, dark area. Excessive exposure to light will ruin the photosensitive drum. Be aware that using harsh chemicals containing ammonia, benzene, or other strong agents can cause damage to the cartridge drum. Cleaning the room or office that houses the laser printer should be done with cleaning agents that are less harmful. When opening a new or remanufactured cartridge, be sure to remove the dam before the cartridge is inserted into the machine. This will prevent the possibility of toner falling into your machine as the dam is removed, which can cause black streaks across the page.

Take out the small green cleaning brush (Figure 3) that is just to the right of the paper feed guide. The padded end of this tool is used to clean the cartridge corona wires. Do not use this pad to clean the machine corona wires as this will cause the tool to become excessively dirty and prevent it from working properly.

To clean the cartridge corona wires, insert the padded end of the tool into the slot that is covered with black cellophane (note the position of the cleaning tool in the diagram below). Slide the cleaner back and forth in the slot approximately six times or until the squeaking stops.

#ENDCARD

#TAG

#CARD

Chapter 1...

If your copy is light along one side of the page, you may find that rocking the cartridge will help redistribute the toner. This can be helpful if the cartridge has been shipped to you and the toner has settled to one side in the process. Hold the cartridge flat and rock to 45 degrees front to back and side to side. If this does not help, a sharp side to side shake can be attempted as a last resort. Be sure to clean the corona wires in the cartridge after doing this.

Keeping your laser printer clean and printing properly takes only a small amount of care and a few simple materials. In general, a gentle wipe with a Q-tip or a soft cloth is all that is required. Once you know the areas to key into, a quick glance becomes second nature. A little attention can result in consistently beautiful copy and add years to the life of the laser printer.

#### Flash Me

Do you enjoy writing? Do you enjoy The Flash? Would you like to be published? Have any neat ideas or experiences related to laser printers, desktop publishing, transfer toner, or a related topic? Do you have information you think our readers will be interested in? Write for The Flash! We put a lot of thought into the creation of The Flash and all of its articles, but nothing is more useful to us than the reader feedback and ideas we receive.

Like an article you saw published in The Flash, and want to print it in your publication? We will trade or barter articles. For questions on publication dates, article trading or if you have information you want to share, contact us at (802) 439-6462 or at 73130,1734 on CompuServe.

But it was fine when I last used it....

During the final stages of cartridge use, drum defects may not be visible on the output. Since the toner is not as dense at that point, scratches and dents may not show up. However, after the drum is polished and the cartridge refilled with new toner, any flaws will become apparent. For optimum performance, cartridge drums must be replaced when they show signs of wear, including scratches, nicks and exposure lines. All BlackLightning drums are carefully inspected to ensure top quality printing and for the ultimate in drum performance. Try our Emeralds drum for the very best results!

What's Black & White....

How to tell if it's the corona wires in the machine or in the cartridge that are causing unsightly streaks? If your laser printer cartridge corona wires are dirty, black streaks will appear down the printed page. If white streaks or spots appear, the problem lies in the printer. In a copier, white streaks could be caused by either the cartridge or machine corona wire being dirty. But, alas, there is an exception to every rule: EP-L cartridges (HP IIP) don't have a corona wire.

#ENDCARD

#TAG C1S4P1.pct

#CARD

Chapter 1...

LX Maintenance

## Care & Feeding of Your Personal Laser Printer

by John Jeffries of BlackLightning  
new in the Flash Compendium

The Canon LX engine is used in the latest generation of low-cost “personal” laser printers from many different manufacturers. The printers that use this engine are rated to print about four pages per minute and usually have a “p” or the word “personal” in their name; some examples are the HP LaserJet IIP and IIIP, the Apple Personal LaserWriter NT and NTR, and the Canon LPB-4. These printers are called personal because they are generally not designed for the rigors of large network printing, but they are priced just right to be used in a small office with a few users.

#ENDCARD

#TAG C1S4P2.pct

#CARD

Chapter 1...

The LX engine is the third generation of the Canon laser printer engines following the CX and the SX engines. Canon of Japan actually makes the internal parts of all the printers that use these engines. The printer manufacturers make the cases and provide the interfaces to connect them to your computer. The LX engine continues Canon’s trend of making their laser printers easier to use and maintain. The cleaning materials that you need to clean your personal laser printer are easy to find at most drug stores: Q-tips, a lint free cloth, isopropyl alcohol, a small vacuum, and BlackLightning’s cleaning fluid or acetone. If you keep these supplies near the printer, they will always be handy when you need them. They may even remind you to do the cleaning periodically. It is recommended that the printer be cleaned every time you have to change an empty toner cartridge or at least four times a year.

Be sure that the area around the laser printer is clean and clear of obstructions to the airflow. Try to keep the area free of dust and keep at least two inches clear on all sides to guarantee sufficient cooling. If the printer’s cooling vents become blocked, it may overheat and produce poor copy or paper jams. The printer should not be placed in a hot or cold area or in direct sunlight.

When ever you start to clean the printer, be sure that the power is turned off; there are some very high voltages and hot components in the printer. It is best to leave the printer off for half an hour to let the fuser roller cool so you won’t burn yourself. We will start cleaning from the outside and work into the printer.

#ENDCARD

#TAG

#CARD

## Chapter 1...

Wipe off any dust or dirt that has collected on the top of the printer or in the vents along the sides. If you have a stubborn stain that will not come out, try a mild alcohol or water based cleaner. It is very important that you do not use any thing with harsh chemicals like ammonia on the printer because the fumes can damage the internal parts of the printer and render the drum in the cartridge unusable. If you need to try a new cleaner on the printer test it on a small, unobtrusive area.

Next, pull down the paper tray on the front of the printer. If the tray is open and there is paper in it, remove the paper so it does not get in the way and does not get dirty. Use your cloth to wipe off anything that has collected on the surface of the paper tray. Be sure to slide out the extension and wipe it too.

To open the printer, pull up on the gray release button to the right of the paper opening on the front of the printer. Pull out the cartridge and set it aside out of direct light. You may have to press on the cartridge release button to get it out. The cartridge requires no cleaning or maintenance for itself, but you should wipe off any accumulated toner or paper dust so it does not fall into the printer. Now is a good time to acquaint yourself with the internal parts of the printer. Along the base of the door and in the base of the printer there are some rubber rollers that pull the paper into the printer. Above these paper pickup rollers in the door, is the charge roller. This is the roller that pulls the toner off the photoconductive drum onto the paper. Above the charge roller is the fuser assembly. Be careful, this area may be hot if the printer was turned on recently. Above the fuser assembly are the paper output rollers. There are two sets of these rollers, one on the inside of the door and one on the outside. As you look into the printer with the door open you can see the cartridge cavity. You can use your cloth or small vacuum to pick up any dust that has collected there.

Use a vacuum or cloth to pick up the dust and toner that has collected in all the nooks and crannies in the printer. Be careful not to suck up any loose parts of the printer (there should not be any), and do not knock any delicate areas with the nozzle of the vacuum. As the rubber rollers in your printer age they will begin to harden to the point where they will no longer pick up the paper. This hardening will cause the printer to jam more often and to misregister the image on the page. You can delay or even eliminate this aging by occasionally treating all the rubber rollers with acetone. The rollers you should treat are the four paper pickup rollers at the bottom of the door and the six output rollers at the top of the door (three on the inside and three on the outside). Do not clean the charge roller with acetone. This treatment does not need to be done every time you clean the printer, but try to do it at least four times a year. To treat the rollers, dip a Q-tip in the acetone or the BlackLightning

Cleaning Fluid. The Q-tip should be damp but not dripping with the fluid. Next, carefully dab at the rollers with the Q-tip. If the rollers turn easily then go ahead and spin them so you can get the other side. If the Q-tip comes away black with dirt, then start again with a fresh Q-tip until the rollers are clean. When you use acetone, be sure to leave the printer open with no cartridge in it to let the fumes air out. High concentrations of the cleaner can damage the photoconductive drum in the EP-L cartridge.

The last area to clean is the fuser assembly. Close the printer, but leave the paper tray down. You can pull down the external fuser access door (Figure 1) to see the fuser rollers. When you open this door, you will see two red rollers running from left to right. The closer roller is the pressure roller, made of a soft rubbery material. The farther roller is the heat roller. It is much harder and is the one that gets hot to melt the toner onto the page. When you pull down the the access door, you can check the condition of the fuser roller. If your printouts begin to develop a vertical line on the page, there may be a scratch on the heat roller. If this happens, you will have to replace the fuser roller. We have noticed that a small scratch on this roller does not effect the print quality, but a larger one it may be a problem. Because the space is so tight in the fuser assembly, the only way you can clean it is to run the cleaning paper through the printer. It is a good idea to do this each time you put a new cartridge into the machine.

That is all that is involved in cleaning your printer. The only thing left to do is to put the cartridge back in the printer and start it back up again. After a few cleanings you will become proficient and it will not take you more than a couple of minutes to keep your printer in tip top shape.

#ENDCARD

#TAG C1S5P1.pct

#CARD

Chapter 1...

Making Toner

The Manufacturing Process

by Tom Durgin of BlackLightning

with assistance from Pat Bell of ITA

from The Flash volume 3, issue 1

Toner is the powdery ink that seems to magically move from the cartridge to the printed page. Surprisingly, its basic ingredients are actually common materials. The method of processing and delicate mixing, on the other hand, are very exacting and not so common at all.

Monocomponent toners are “premixed” if you will, while bicomponent toners go through a final mixing in the laser printer or



copier itself. The popular Canon engines, found in a wide array of copiers and laser printers, are self contained, using monocomponent toners. Ricoh machines, on the other hand, use bicomponent toners. The descriptions in this article are based on monocomponent toners. Toner consists of a few basic ingredients, some synthesized, others natural. Toner is 35% to 40% iron oxide (rust) designed for specific magnetic properties. It is this magnetic charge and static charge which causes the toner to move from the hopper of the cartridge, to the developer roller, to the cartridge drum and onto the paper. The toner's primary ingredient, plastic (styrene or a styrene/acrylic blend), melts readily when exposed to heat. Thus, once on the paper, the powdery toner is melted into place as it passes through the heat and pressure of the printer's fuser rollers.

Some of the other materials added are used to help adjust these crucial characteristics. A type of sand (silica) acts as a free-flow agent, keeping the toner from clumping. A charge dye is used to adjust the static charge of the toner. Wax aids the dispersal of the toner as it melts with the heat of the fuser rollers.

For consistency, toner is made either in very large batches, the way paint companies make a batch of a particular color, or in a continuous process. In a large batch process, variations in the toner may occur from batch to batch, but good quality control minimizes these differences. In the continuous process, changes occur only over a long period of time, and are also negligible.

One common method used to process toner involves heat and cold. The melt mixer has two large steel rollers. One is heated by steam, the other is cold. On the smaller scale, used by specialty toner manufacturers, the process of melt mixing bears a remarkable resemblance to making taffy. The rollers turn in opposite directions to each other. As the powdered plastic is introduced, it goes around the heated roller and folds back into itself. The cold of the other roller prevents the resin from sticking. Gradually, a long roll of resin is formed in the nip where rust, sand, wax, carbon black, and dye are added. When the roll has reached the correct proportions, it is cut off the steel rollers with a large blade. After being folded like a flag, the sheet is reintroduced to the melt mixer. The rolling and folding process is repeated several times. When the roll is removed from the machine for the last time, it is allowed to harden.

This hard sheet of toner is coarse ground into small pellets and jet milled to a fine powder. Care must be taken not to grind the particles too uniformly; toner actually works best when the particles fall within a certain range of sizes. If the proportion of sizes in the toner is off, it will result in spotting and smudging on the print. The range of proper particle size is from 5 to 15 microns, so fine that the dry toner looks and acts much like a fluid.

Classification of the toner uses centrifugal force to separate the samples by size. The test toner is then processed through a machine normally employed to count blood cells called a Coulter Counter. The

results of these tests are plotted and graphed. A “post blend” may be done to fine-tune the mix with additives that control charge, flow and other properties.

As for the color, both the plastic and rust turn black during the manufacturing process. Carbon black is added to further deepen the blackness of the print. Making any other color is difficult because the normal black of the toner must be masked. Unfortunately, masking affects more than just the print color. The magnetic charge of the black iron oxide may be affected by the addition of pigment or dye. Similarly, dye may change the melting point of the plastic which must stay within the range of the printer’s fuser roller assembly's requirements. The result is that monocomponent color toners are very hard to produce. This means that the color choices are limited for the popular laser printers based on the Canon print engines. Nevertheless, we at BlackLightning will continue to investigate the colorful possibilities and bring you new and exciting options like our six colors of print toner cartridges and our line of twelve transfer toners.

Toner is a mixture of unremarkable, ordinary substances. Yet, when mixed properly, it is capable of making the most sophisticated printers and copiers produce remarkable results.

Feed Me

When not used regularly, the manual feed section of a laser printer may become dirty and cause smudges on the print out. To clean this area, simply feed several pages through the printer before use.

Heavy paper works better.

#ENDCARD

#TAG C1S6P1.pct

#CARD

Chapter 1...

Ozone

Friend and Foe

by Holly Blumenthal of BlackLightning  
from The Flash volume 4, issue 1

Along with providing beautiful copy and graphics, your laser printer and photocopier also emit ozone. This relatively fragile chemical, which is such an important presence in our atmosphere, is not so welcome closer to home; in large quantities, it can be a health menace.

The ozone layer, which envelopes our Earth 13 to 35 miles above the surface, is necessary for life on this planet. This relatively thin blanket absorbs much of the sun’s harmful ultraviolet light and is the only substance to do so. The ozone layer also helps keep the weather confined to the atmosphere near the Earth’s surface, preventing

temperatures from taking a permanent plummet.

Closer to the earth, where we live, this same chemical can be a health hazard. Ozone contributes to smog and can cause symptoms ranging from a dry nose and throat to, in sufficient quantity, death. The British Health Safety and Executive (HSE) Guidance Note EH38 (published 1983) recommends an ozone exposure limit of 0.1 parts per million (ppm), averaged over an 8 hour day. Even at this level one may experience dryness and irritation of eyes, nose or throat, and possibly premature aging. Nausea, headache and increased risk of lung infection may occur at an exposure level of 0.5 ppm. Extremely high exposure of 50 ppm for 30 minutes can be fatal.

#ENDCARD

#TAG C1S6P2.pct

#CARD

Chapter 1...

How ozone is formed: Oxygen molecules normally have 2 atoms (O<sub>2</sub>). Ozone is simply an oxygen molecule with an extra atom (O<sub>3</sub>). Sunlight or discharges of static electricity will split oxygen molecules, forming single oxygen atoms (O). These single atoms (O) link with oxygen molecules (O<sub>2</sub>) to form ozone (O<sub>3</sub>). Ozone molecules are unstable and easily broken down, but, during that process, the ozone will attack just about everything except glass and some stainless steel. Ozone is even used as a commercial bleaching agent. So, it is not surprising that, while important to our atmosphere, direct ozone exposure may be hazardous to your health.

The same electrostatic charges which produce ozone are used by printers and photocopiers to charge the drum. This attracts the toner from the reservoir to the photostatic drum. Then the toner is pulled down onto the paper using more electrostatic charges. There are filters built into printers to address the creation of ozone. The activated carbon of these filters breaks the ozone down into oxygen (O<sub>2</sub>) molecules before it leaves the printer. New printers emit ozone in levels far below the HSE recommended limit of 0.1 ppm. However, the ozone filters built into printers become less effective as they become clogged with dust from the air, paper, and toner. After 12 to 18 months it is prudent to replace the filter or add an external filter. Beware that clogging is faster if room ventilation is poor or if there is a large amount of dust in the air.

In the Series I laser printers, pull the cartridge out to find the filter. Look into the cartridge cavity in the lid. Toward the top and left of the machine is a rectangular charcoal filter. There is a matching series of horizontal vent slots on the outside of the machine, just above the paper tray. In the Series II machines, the filter is located in the base. There is what looks like a square black cavern in front of the green "Warning High Temperature" lid, on the inner right hand wall of the printer. This cave is where the filters and cooling fan are located. Just above the power switch of the Series II printer are the

corresponding horizontal vent slots. Vacuum these filter and vent areas thoroughly to remove dust. This allows the filters to work more effectively.

#ENDCARD

#TAG C1S6P3.pct

#CARD

Chapter 1...

It is important to place printers as far away from work areas as is efficient. Be sure that the vents are not directed toward a work area. Ventilation is important to both decrease the concentration of ozone in the office and to increase the longevity of the printer's filters. Replace filters annually or every 25,000 to 50,000 pages, whichever comes first.

#ENDCARD

#TAG

#CARD

Chapter 1...

A little trick we use with our laser printers is to apply a small label to the ozone filter with the date and number of copies at which the filter was changed.

It is difficult to know when a filter is clogged. In this case it may be your nose that knows. Derived from the Greek word ozein, "to smell," ozone at ground level gives off a pungent, acrid odor. You may have noticed this aroma around leaking power lines, electric toy trains, or after a lightning storm. The ozone smell is noticeable at levels well below the HSE recommended limit of 0.1 ppm. A concentration as low as 0.008 ppm can be detected by sensitive noses, and almost anyone can pick up the acrid odor at levels of 0.02 ppm. So, being able to smell ozone from your printer may be cause for concern, but not panic.

Replacement filters are available for the Series I (EP engine) laser printers and the PC10-PC25 copiers. An external snap-on filter is available for the Series II (EP-S engine) laser printers. When ordering a filter, be sure to specify:

- 1) Type of machine: EP, PC, or EP-S,
- 2) Manufacturer: Hewlett Packard or Apple,
- 3) (EP-S only) Age

- prior to 7/89 [Does NOT have green duct door inside printer on right]
- after 7/89 [DOES have green duct door inside printer on right]

A place for everything and everything in its place. Miles above us, the ozone layer is an important protective blanket, but in our homes and offices, ozone can be a menace to our health.

Further Reading

Buyers Laboratory. "Ozone: Hidden Danger in Copiers?" Copy Magazine, 9/1991.

Fox, Barry. "Safety Body May Strengthen Ozone Controls for Offices." New Scientist, April 7, 1990.

Gribbin, John. The Hole in the Sky. Bantam Books, New York, 1988.

Roan, Sharon L. Ozone Crisis. John Wiley & Sons, Inc., New York, 1989.

Theroux, Paul. O-Zone. Ballantine Books, New York, 1986. Speculative in nature.

#ENDCARD

#TAG C1S7P1.pct

#CARD

Chapter 1...

Copier Care

Keeping Up the Original

Canon Personal Copiers

by Dawn Marie Poland of BlackLightning

from The Flash volume 2, issue 1

Photocopiers are a wonderful convenience, and many offices depend on them for quick and easy use. Basic care and maintenance of the copier can help prevent the chaos which ensues when a well used machine is "down". To keep your equipment functioning well and avoid and costly service visits, this article will cover basic care for the oldr Canon PC 10, 14, 20, 24, and 25 copy machines.

The general maintenance and cleaning of the copier requires a few basic supplies: water, isopropyl alcohol, several Q-tips and some cotton balls. A supply of these items should be kept near the copier for quick, regular cleanings.

#ENDCARD

#TAG C1S7P2.pct

#CARD

Chapter 1...

Before you begin, be sure to turn the copier off. This should be done five to ten minutes before cleaning the machine to allow it to cool. This reduces the risk of burning yourself when contacting the hot fuser rollers. Be sure to slide the glass top completely to the right before opening the copier. Open the top of the copier by pulling up on the release lever, and then remove the cartridge. It is important to familiarize yourself with the internal parts of the copier through thorough examination of the diagram, because some parts are delicate and care should be taken not to damage them during cleaning.

Identify the location of essential areas to be cleaned, beginning at the front of the copier and moving to the rear (Figure 1). First, locate the

wide, black, ridged paper exit tray. This may be cleaned with a soft damp cloth or cotton ball. A dirty paper tray may cause the back side of the page to become soiled.

Find the fuser assembly. It is under a fuzzy green cover at the very front of the copier's interior. Use caution, this area may be hot. Lift the cover, and remove the fuser wand. This is a black plastic stick with a fuzzy green handle. Check the felt strip on the front face of the wand for toner buildup. If the wand has toner caked along the edge, it should be replaced with a fresh wand which can be purchased from a dealer or remanufacturer. If a replacement is not available, the felt can be cleaned by scraping it with the edge of a paperclip. A dirty wand may be the culprit behind vertical downward streaks and smeared print.

Just below the wand is the fuser roller. Dust particles and residual toner may build up here. Use a dry cotton ball to clean the fuser roller, which allows the dirt to be picked up without falling back into the machine. Cleaning the roller should be done gently, taking care not to scratch its surface. Above the fuser roller, in the body of the cover, there is a set of paper separation claws. Toner may accumulate at the tips of these claws and they should be wiped clean. When you are finished, replace the wand and close the green cover.

There are several small parts within the interior cavity of the copier. These components may collect particles of dust and toner and can be easily cleaned with a vacuum. It is very important not to knock the copier's components with the hose or nozzle. Pay particular attention not to damage the corona wires while vacuuming, as they are especially fragile.

The machine's ozone filter may be located by viewing the interior of the copier through the cartridge cavity. The filter is on the ceiling of the interior, and is rectangular in shape. Gently clean it with a vacuum, soft cloth or toothbrush. If the filter clogs, the machine can overheat and the filter may need to be replaced. Clogging can cause blurred print, toner bleed-through, an abnormally crusty wand buildup, and a burning smell from the machine. It is important to keep the area around the copier cleared, to provide adequate airflow to the vents.

There is a silver colored rectangular well in front of the fuser assembly. The well is criss-crossed with the transfer wire. The corona wires is barely visible beneath these wires. Dirty corona and transfer wires may cause white patches or vertical streaks, that look like paint drips, on the page. To clean these wires, use a Q-tip moistened with isopropyl alcohol. Gently wipe the Q-tip back and forth along either side of each wire segment. Avoid excess pressure because, not only are the wires delicate, but they are also costly to replace.

#ENDCARD

#TAG C1S7P3.pct

#CARD

## Chapter 1...

Immediately behind the fuser assembly is the paper guide, which is a black plastic ridged tray. Beyond the corona wires is the transfer guide, which is a bronze colored metal plate. Both areas should be cleaned with a soft cloth or cotton balls slightly dampened with water.

Running perpendicular to this area is the separation belt (Figure 3). The belt is a three-inch-long, clear plastic strip that guides the paper and prevents jamming. It attaches to a peg on the surface of the transfer guide, threads over one roller and under the other, and hooks onto a thin, metal peg above the paper path. If the machine jams frequently, the separation belt may be broken. There may be an extra belt stored in the machine. They are also available for purchase through your cartridge supplier.

#ENDCARD

#TAG C1S7P4.pct

#CARD

## Chapter 1...

Simply looking at the separation belt will usually indicate if it needs cleaning. A black smudge on the right side of the page also indicates that the belt is dirty. To clean the separation belt, detach the spring from the metal peg by pulling it gently to the left about two millimeters. Hold that end with one hand and lift the top roller off the belt and, with your other hand, grasp the belt between the thumb and forefinger. Gently draw the belt through this “pinch-hold” a few times to clean off any toner smudges. Still holding the end loop, replace the belt by threading it back through the rollers and hooking it onto the peg. This requires practice and dexterity, so don’t be discouraged if it seems difficult the first time. A dampened cloth or dry Q-tip can also be used to clean the separation belt without detaching it. Be sure to use only water, since alcohol and other solvents may damage the plastic.

Now it’s time to turn your attention to the toner cartridge itself. Proper care of the cartridge is very important to the quality of your copy. Cartridges should be stored out of direct light in the original packaging in a dry, dust-free, temperature controlled environment. Excessive exposure to light will ruin the photosensitive drum. Harsh chemicals containing ammonia, benzene or other strong agents can cause damage to the cartridge drum. Cleaning the room or office that houses the copier should be done with chemical agents that are less harmful. The fumes from these harsh chemicals can damage the drum inside the cartridge, even if the cleaners are not used on the machine itself.

#ENDCARD

#TAG C1S7P5.pct

#CARD

## Chapter 1...

When opening a new or remanufactured cartridge, be sure to remove the dam before the cartridge is inserted into the machine. This will prevent the possibility of toner falling into the copier as the dam is removed, which can cause black streaks across the page.

To clean the cartridge corona wire, hold the cartridge flat to avoid spilling toner (Figure 5). Use the green cleaning tool which is stored inside the copier (Figure 4). (Please note, this tool is not meant for cleaning the machine itself. Using it for this purpose will cause it to become very dirty.) Insert the corona wire cleaner into the long, black film-covered slot which runs lengthwise along the top of the cartridge. When inserted correctly, with the tooth away from the handle, the cleaner fits in easily, but won't work at all if reversed. Pop the tool into place, until it meets the body of the cartridge. The black plastic film that covers the slot protects the drum from exposure to light and you will not damage the wires by bending this film. Slide the tool back and forth along the slot roughly six times, and then gently remove the cleaning tool. A squeaking sound while cleaning does not indicate that the wires are "squeaky clean", but rather, that they are still dirty. When the squeaking stops, the wires are clean. If the cleaning tool appears to be dirty, it can be cleaned by gentle vacuuming. New tools can be purchased from dealers and remanufacturers.

#ENDCARD

#TAG

#CARD

## Chapter 1...

To place the cartridge back into the copier, hold back the cover, and push gently and firmly into the machine. The interior cleaning is now complete.

On the outside of the copier, there are a few areas that require attention. The glass copy plate should be kept free of fine debris and smudges. To clean the underside of the glass, slide the plate to either side as far as it will allow. Again, a caution against cleaners containing ammonia and other harsh ingredients.

The first few copies printed after cleaning may show some spots and specks from the dirt that has been missed during the cleaning.

Running a few copies should clean up this residue.

Once the basic cleaning procedures are mastered, it takes only a few minutes to clean the copier. Good maintenance is good prevention. With practice, cleaning becomes second nature, and with the right materials handy, it's an easy task to complete.

Forever Yours

Toner cartridges can be remanufactured almost indefinitely as long as you have major components like drums replaced as they wear. At



BlackLightning, we replace or repair any small worn or broken parts at no charge each time we disassemble and remanufacture a cartridge. If your EP-S, EP-L, or PCmini drum wears out you can purchase a reconditioned one or a new higher quality Emerald Drum. This is a bit reminiscent of George Washington's hatchet. The blade has been replaced six times and the handle nine times, but it's still the same hatchet!

#ENDCARD

#TAG C1S8P1.pct

#CARD

Chapter 1...

PCmini Cleaning

Maintaining the Newer

Canon Personal Copiers

by Holly Blumenthal of BlackLightning

from The Flash volume 3, issue 1

It takes only minutes to clean and maintain the new personal photocopiers and cartridges. There are two simple keys to success: being familiar with the basic parts of the machine, and keeping the cleaning materials handy so that the job gets done.

Illustrations show PC3 copier, but this information and pictures (with some changes) apply to the PC3, PC5, PC5L, PC6, PC6RE, PC7, and the new PC11.

It is not necessary to buy any of the special cleaning kits on the market. Our research of these products has shown that they work no better than a few common and inexpensive items found at your local drug store. These basic supplies include Q-tips, cotton balls, a cotton rag, isopropyl alcohol and water. Keep a supply stored close to the copier and within easy reach.

#ENDCARD

#TAG C1S8P2.pct

#CARD

Chapter 1...

First, be sure the copier is off, then lift the cover. You'll see written instructions on "How to Make Copies" and "Replacing the Cartridge" underneath the glass copy board. There is an arrow coming from a green lever in the lower right hand corner of these instructions. Following the directions for removing the cartridge, slide the copy board all the way to the left. Lift the green lever and raise the top to reveal the internal parts of copier. Familiarize yourself with the glass copy board, cartridge, fiber lens, brass colored transfer guide, delicate machine corona wire assembly and black paper guide with its wide paper roller.

Remove the cartridge from the copier. Running the length of

the cartridge is a brass colored bar. Next to this bar is a black film approximately 1/4" wide, which serves to protect the cartridge drum from exposure to light. The cartridge corona wire is beneath this film. To locate the cleaning tool for the cartridge corona wire, lift the copy board cover as though you were about to make a copy (Figure 2). In the lower right hand corner of the cover is the storage peg for the gray cleaning tool. Pop off the tool, and insert the long corona wire cleaning pad into the film covered slot. The "U" shape of the tool fits over the black plastic edge. Slide the tool back and forth along the slot at least 6 times, making sure to reach each end. If there is a squeaking noise when sliding the tool, the corona wire is dirty. Continue the cleaning until there is peace and quiet. Set the cartridge aside in a safe place, and turn to cleaning the inside of the machine.

#ENDCARD

#TAG C1S8P3.pct

#CARD

Chapter 1...

The other end of the cleaning tool is used to clean the fiber lens of the copier. The image is transferred from the copy glass, through the fiber lens, into the body of the copier. With the machine closed, slide the copy board all the way to the left (Figure 3). You can see the long fiber lens running along the side of the instruction panel. Insert the hook end of the tool in the groove and move it from end to end. Then open the machine. In the area where the cartridge is normally held is the underside of the fiber lens. Place the pad against the lens and wipe the entire length.

The next step is to clean the delicate and critical machine corona and transfer wires. Open the machine again and look for the fine strands of the transfer wire which criss-cross the silver well (Figure 4). The corona wire is long, and runs the length of the well just below the criss-cross transfer wire. Dampen a Q-tip slightly with isopropyl alcohol and gently clean the corona and transfer wires. (Figure 5) This may seem awkward at first, but it gets easier with practice. Persist. There is no need to apply pressure to any of the wires, just a gentle wipe is sufficient. Clean the sides and top of each wire as you go. Repeat this process until the Q-tip is no longer collecting residue. If used repeatedly, alcohol will cause plastic and rubber to deteriorate, so be sure to use only water or a dry cloth for cleaning any plastic parts of the copier.

#ENDCARD

#TAG C1S8P4.pct

#CARD

Chapter 1...

The fuser roller and wand are located beneath the paper exit. Carefully lift the exit tray, which will pivot and come to rest on the top of the copier. Looking at the paper exit slot, there is a square

gray button on the right. Gently lift this lever. The back door will open and drop down. The fuser wand, which has a green fuzzy handle, is located in the upper portion of the cavity. To remove the wand, grasp the handle with thumb and forefinger, and pull out. There is a felt on the bottom of the wand which wipes excess toner from the fuser roller. Be aware that the fuser wand body and fuser roller may be quite hot. If the felt is dirty, either replace the wand with a new one or gently scrape off the caked-on toner with the edge of a paper clip. Always replace this wand when you are replacing a cartridge. Clean the fuser roller by gently picking up excess toner with a dry Q-tip or cotton ball, being careful not to scratch the roller with a finger nail. Replace the fuser wand, close the lid and reattach the paper tray.

#ENDCARD

#TAG C1S8P5.pct

#CARD

Chapter 1...

Reinsert the toner cartridge and close the cover by pressing the designated area marked along the upper right hand edge of the lid. If you push down on the center or lower edge of the cover, it will not latch properly.

The final shine is the copier glass. Lift the copy board cover to clean the glass using an ammonia-free window cleaner and a cotton cloth. Ammonia and its fumes will damage the sensitive drum of the cartridge, so be sure to double-check the cleaner's ingredients. It is possible to clean the entire underside of the glass by moving the copy board all the way to the left, wiping the glass that can be reached, and then moving the copy board all the way to the right.

[Picture 5]

With a basic understanding of the copier and a few simple tools, the job is easy. Although the first few attempts at cleaning may seem awkward, with practice, the process will become smooth and efficient. Regular cleaning improves user/machine relations, decreases frustration and produces consistently beautiful copy.

#ENDCARD

#TAG

#CARD

Chapter 1...

Remanufacturing

Why, What, Where

by Walter Vose Jeffries of BlackLightning  
from The Flash volume 2, issue 1

By having your cartridges remanufactured you can save

hundreds and possibly thousands of dollars per year, get more copies per cartridge, higher quality copies and interesting specialty toners; provided you can find the right remanufacturer. The smart consumer has only to remember that all remanufactured cartridges are not created equal.

You may buy your cartridges from Canon, Apple, Hewlett Packard, or QMS who may have manufactured your printer or copier, but whomever you buy from, the cartridges all come from Canon's factory in Japan. Canon makes the print engine used in most popular laser printers, standardizing the cartridge across Value Added Resellers such as Hewlett Packard and Apple. Canon's ingenious system significantly decreases the typical number of service visits per year by placing the toner, light-sensitive drum, developer roller, and other critical components in a "disposable" cartridge. Thus, when you replace your laser printer's cartridge, you are in effect, performing a service call by replacing these parts. This convenience and reliability comes at a cost: the high price of cartridges. New cartridges, which carry a suggested price of \$130.95, may range from \$99 to \$169 depending on the source, type, availability, and quantity that you purchase.

Despite being marketed as disposable, these cartridges are reusable, when properly remanufactured. At costs far below the cost of a new cartridge you can reuse your cartridge dozens of times, even indefinitely if you have critical components replaced periodically as they wear, just as you replace the tires on your car when they become bald. Typical remanufactured black cartridge prices range from \$49 to \$99, depending again on source, type, quantity, and most importantly, quality. By finding a reputable remanufacturer you will realize more than just cost savings. A reputable remanufacturer completely services the cartridge and refills the reservoir with more, higher quality toner than Canon does. Thus, you change cartridges less frequently and get better looking copy.

Additionally, with remanufactured toner cartridges you can get a wide variety of toners that are unavailable from the OEM be it Canon, Apple, and HP. These include specialty toners for finer text, darker graphics, high resolution printers, MICR toners for check printing, colors, and sublimation heat transfer toners. You can also get Emerald drums which will make a cartridge last for many years as the original photoimaging drum in the cartridge is the most likely component to fail.

When searching for a reputable remanufacturer to do business with take the time to survey the market. Check out advertisements in the backs of magazines. Talk to other people who use laser printers. Call up a few of the most promising companies, many will have toll free 800 numbers. Develop your own criteria for rating the companies. The following will give you a start. How long have they been in business? The longer the better. There

have been a number of fly by night and quick start companies in recharging who start up with the idea that this is something anyone can do simply by pouring new toner into the cartridge. Look for experience.

Are they a franchise? Beware of small franchises that come and go with the season. Many do not have the necessary technical background to properly do the job and are merely following a manual. Sometimes the main company produces a quality product, but its franchises may not follow in its footsteps.

Do they have an engineer on staff? More specifically, do they have expertise? Who developed the technology that they are using? Is that person still with the company? Are they committed to on-going research to improve services and develop new products?

Do they do complete remanufacturing? Beware of the infamous "Drill & Fill" operations! There is a lot more to remanufacturing than just replacing the toner. The complete process of remanufacturing is very involved and requires the use of specialized equipment for completely cleaning the cartridges and drums of old toner residues. Components must be adjusted, drums polished, and parts lubricated. Beware of any company that does not remanufacture the fuser wand. It is critical to the proper operation of your machine and must be properly lubricated. Beware of companies that will send you the toner to "pour in" your cartridge yourself or who sell cartridges that have been modified for "Drill & Fill" and are provided with bottles of toner and wands. These operations do not provide the critical servicing of the cartridge.

Do they use high quality toner? Some rechargers use toners designed for copiers in their laser printer cartridges. While these may work, they are unlikely to produce the quality that can be achieved through proper remanufacturing. Look for toner quality at least as good as the original and preferably better. The best remanufacturers offer high quality toners that will produce better blacks than the original toners, especially in the series I laser printers which have notorious greys.

Do they properly seal the cartridge? If the cartridge is not properly sealed during the remanufacturing process it will leak during shipping. Be suspect of companies that insist on hand delivering their product. They may not have mastered the technology. A proper seal makes shipping possible so you are not limited to the local kid down the block. The top remanufacturers do business throughout the country and are not limited by geography.

Do they test the cartridges? Every cartridge should be tested in the appropriate laser printer or photocopier before it leaves the plant. This assures that the cartridge you get will be of the highest quality. Be suspicious of any recharger who does not even own a laser printer. They are unlikely to be able to provide quality products.

Do they offer new drums? There are new drums available for some cartridge models which are better than the drums provided in the

original cartridge. A premium quality drum will have a harder surface that will be more resistant to wear and thus last longer and give better images. If the new drum is available for your cartridge, then get it. You'll be happier in the long run. Beware of coated drums. These are regular original drums that have been coated with some substance. We have found that these coatings come off very quickly and do not improve the print quality at all.

Are their cartridges fully guaranteed? They should guarantee their work. If they don't then avoid them like the plague. The last thing you need is a fly by night outfit. All of the major companies do guarantee their products. This relates back to how long they've been in business. Their guarantee won't be much good if they go out of business next week.

Service and professionalism? Are they doing it in their basement on weekends or is this their primary business. Look for companies that focus on remanufacturing. You don't want someone who does it as a hobby, you want professional results. Ask for their literature. Does it look professional? Are they friendly on the phone? Are their sales people well informed and helpful? Can they provide technical support in case you call with questions? Are they knowledgeable about their products? Beware of those who cannot be reached during normal business hours. This situation bespeaks of a part time job. Packaging? The cartridges that come back to you should be properly repackaged in a new foil bag and box. The wand should be sealed in plastic tubing to prevent the fuser oil from dissipating. Good packaging is a sign of a company that is proud of its products.

While most companies do refill the cartridge with at least a much toner as the original manufacturer, the total amount will vary. In addition, some companies offer options including color refills, and special graphics-quality toner. These options may increase the price of the product, especially for expensive color toners.

Pooling refers to the practice of exchanging your cartridge for another. With a high quality remanufacturer pooling will not matter because all the cartridges are high quality, fully tested and guaranteed. Pooling helps the remanufacturer keep their costs down and thus keep your price lower.

Most laser printer users have, or should have, more than one cartridge. We tend to recommend three cartridges per printer. Thus one is in the mail, one is being used, and the other is on the shelf waiting to be used. Because of this, the turn around time does not tend to be an issue as long as it is not longer than a couple of weeks.

Price is not a primary concern. As noted above, the price varies considerably. At the bottom of the range you may want to be suspicious of the quality of the product, and at the top of the range you are not making significant savings over a new cartridge. You will save more money (in product quality and reliability) by going with a reputable firm rather than going for the lowest price. With a good remanufacturer you will experience significant savings. Don't skimp

on the quality and gain a whole new headache.

In summary, look for a remanufacturer who: has been in business for a while; has a good reputation; knows what they are doing; does a complete job; is friendly, helpful, and knowledgeable; uses quality toners; tests all their products before they leave the plant; and is professional. By following these rules you will probably find a firm who meets your needs with quality at a savings.

#ENDCARD

#CARD

Chapter 1...

Remanufacturing, continued

Clear as Black & Black

BlackLightning graphics toner will give you the darkest black possible from a toner cartridge. When using the cartridge for special desktop publishing purposes containing large black areas such as oversized type or boxes, running several pages of solid black copy before printing will produce the blackest copy possible. This primes the drum up so that it will produce at its absolute best. Although we pride ourselves on the quality of our graphics toner, no toner cartridge will provide an absolute black. If an absolute black is needed, use a linotronic typesetter at a local service bureau. They print with a laser beam onto photographic film at very high resolutions. You might also want to investigate our Hi-Res toner for the newer laser printers.

Show Time

When trying to estimate how much toner is left in the laser printer cartridge, a good thing to remember is that the cartridge indicators do not reflect the amount of toner used, but the number of pages run. For instance, if an EP cartridge indicator shows yellow, at least 2500 pages have been printed and red indicates approximately 3000 copies. At this point, the amount of toner left in the cartridge depends on how much print has gone onto the copy. Don't forget that the amount of toner used per page makes a big difference in the number of copies you'll get from a cartridge. This will vary depending on the amount of text or graphics and the density setting of the printer.

Under Cover Work

If you leave your paper exposed to the air during humid weather it will absorb water and wrinkle. This will also reduce the copy quality and the paper may jam more often. Wet areas will not take the charge from the printer transfer wire as well, thus giving light areas or drop out in your print. To avoid this problem, do not open the

reams until you need them and store the paper in a closed container.

#ENDCARD

#CARD

Chapter 1...

## Computers & Health

by Holly Blumenthal of BlackLightning

from The Flash volume 4, issue 1

Don't scoff at the joke about catching a virus from your PC. So starts Winn L. Rosch's Lab Notes column "Does Your PC - Or How You Use It - Cause Health Problems" in PC Magazine (9-26-91). This article is a well balanced discussion of the health issues related to working at a personal computer. False myths are discounted with solid counterpoint and valid concerns are covered with clarity and a dash of humor. A breath of fresh air amid so many irresponsible, inflammatory articles that have been in the computer press of late. Some highlights:

- Research indicates that IF there is a danger to fetuses or pregnant women, the cause is NOT anything the equipment does to the user, rather what the users do to themselves. ie. inactivity, poor posture, poor diet, etc.
- Looking at the screen, in and of itself, will not cause permanent eye damage; but eye fatigue may result from glare, low contrast, improperly corrected vision or poor arrangement of work materials. Keep screen glare from lights and windows to a minimum. Dust your screen regularly for best possible contrast. Have your eyes checked and wear glasses if prescribed. Moderate your eye work - don't shift your focus dozens of times a minute, and don't lock your eyes at a consistent distance for hours on end.
- Repetitive Strain Injury is a valid concern for those who regularly type for several hours a day. Any repeated motion, be it swinging a hammer or tapping at the keyboard, can cause injury due to the irritation and swelling of tendons, joints and nerves. For typists, the result may be pain through the wrist and forearm and numbness in the thumb or fingers. Treatment of this injury ranges from resting the wrists to physical therapy, cortisone injections and even surgery. A better solution is prevention. Don't persist with the same motion for hours on end. Break up typing tasks if possible. Stop for a minute every 15 minutes or so to pick up a cup of coffee or just stretch for a moment, moving your wrists in small circles. The idea is to vary the movement.
- Sitting in one place all day is a strain on the neck and back. Get up periodically and take a break. Stretch. Run an errand. Adjust your chair so that it is comfortable. Researchers have found that the ideal adjustment is not necessarily the perfectly straight back. A common theme with these health problems is lack of variation.



Periodically change to a different task; moderation and variety are key.

#ENDCARD

#CARD

Chapter 1...

TowerFeed

by John Jeffries of BlackLightning

The problem with most laser printers is they only have one paper tray, yet different jobs require different papers. Changing the paper in the laser printer is inconvenient, but one type of paper just won't fill all of your printing needs.

DynaBit may have a solution with their \$1,995 multidrawer printer feeding product, the TowerFeed, that gives your printer as many as five different paper types or sizes available at one time. Our unit came with three drawers: two US letter and one US legal. A4 drawers are also available. Extra drawers can be purchased for \$195. The TowerFeed is for Apple LaserWriter & HP LaserJet printers.

The unit is well constructed, easy to set up and the manual was well written. The TowerFeed comes with a special LaserWriter driver, Print Monitor and Backgrounder that should be placed in the System Folder on all the hard disks that will be accessing the printer connected to the TowerFeed.

Once installed on a Mac, the software adds a button to the Print Dialog seen when Print is selected from the File menu. This button controls which drawers are used. There is a First Page selection, an All Other Pages selection and a list of Exceptions. These selections allow complete control over the type of paper for each page and any number of ranges of pages. Because these selections can get rather complex and tedious to enter, it is possible to save the page assignments to a file anywhere on disk and retrieve them at a later date. One additional option that I would like to see is an Odd and Even Page selection.

You can code the type of paper in each drawer with a number from one to seven. In the Print dialog you give a name to each code number and select the paper by name for each range of pages you are printing. The TowerFeed looks in each drawer from the bottom up for the requested type of paper. This allows several extra drawers, each coded for one type of paper, to be kept on hand. When one type of paper is needed, it can be slid into any available slot in the TowerFeed. If the paper is not available, the TowerFeed stops feeding and waits. Several drawers can be coded for the same paper for extra capacity.

The unit worked well while I was testing it. The paper is carried up through the front of each drawer to the top of the TowerFeed, picked up by the adapter and fed into the printer. Each drawer has two lights to indicate its status: green for ready and yellow for paper out.

One time the paper jammed at the interface between the TowerFeed and the adapter. I was later informed by another user that the adapter is very picky about the alignment of the printer on the TowerFeed. If the printer is off by as little as an eighth of an inch, it is likely to jam.

The only software incompatibilities that I know of are PageMaker and SuperLaserSpool. These two products normally use special printer drivers, so they do not work when you replace the drivers with the TowerFeed drivers.

DYNABIT USA, Inc.

324 S. Hyde Park Ave. Suite 200

Tampa, FL 33606      1-800-676-3962      Reader Response

Number 47

#ENDCARD

#TAG

#CARD

Chapter 1...

Your Best Face

Getting Quality Copy with

Your Laser Printer or Copier

by Holly Blumenthal of BlackLightning

from The Flash volume 2, issue 1

With some careful observation and a bit of detective work, it's often possible to pinpoint the cause of poor output which occasionally emerges from a photocopier or laser printer. This article describes some of the most common and most likely causes of poor print quality.

It is helpful to have a basic understanding of how a laser printer or photocopier works when trying to determine the cause of a mysterious smudge. The paper is picked up from the paper tray and moved through the machine by a series of rollers along the paper path, past the cartridge's drum and through the fuser assembly. In the developing process, the corona wire in the cartridge prepares the cartridge drum, providing a "clean slate". The laser beam in the machine uses an electromagnetic charge to apply the image to the surface of the drum. The toner is then attracted to these charged areas. At this point, the print can actually be seen on the drum surface. Meanwhile, the paper passes over the corona wire in the machine which charges the sheet allowing the toner to be attracted from the drum to the paper. With the powdery toner on the surface of the paper, the sheet then passes through the fuser assembly where heat and pressure melt the toner into place.

When a problem does emerge from a printer, one fast and easy trick to narrow down the list of suspects is to change the cartridge in the machine and see if the problem disappears. If the troublesome

markings are still there, then an element in the printer or computer is the most probable source of difficulty. If the problem disappears when another cartridge is used, then an element within the cartridge is the likely cause. Keep in mind that this is not an absolute test. There may be something misaligned in the printer which is wearing on the cartridge drums and ruining each cartridge as it is used or it may be an interaction between printer and cartridge, or an environmental problem. A new cartridge might not reveal the problem initially, but after being used for a time, this same (now, not so new) cartridge will begin to print poorly. If you have difficulty with several cartridges in a row, it is highly recommended that the printer be serviced. For more information on providing basic maintenance and service for your machine check out the appropriate machine cleaning article in this section.

The following troubleshooting chart describes a range of problem markings, possible causes, and appropriate solutions. The descriptions are divided into three basic sections labeled white, grey and black. Diagrams are provided to facilitate quick and easy reference. Following this section is a more detailed discussion of many of the solutions listed. A quick comparison of the pictures here with your machine's output may save a costly service call.

#ENDCARD

#TAG C1S13P1.pct

#CARD

Chapter 1...

White [Picture 1]

Middle or side section of the page is not printing

- 1) Dam is not pulled - Pull the dam.
- 2) Toner packed to one side - Rock the cartridge.
- 3) Empty cartridge - Insert a new cartridge.
- 4) Dirty or broken cartridge corona wire (copiers only) - Clean the corona wire or return for repair. See appropriate machine maintenance article.
- 5) Missing spring in cartridge - Return it for repair.

#ENDCARD

#TAG C1S13P2.pct

#CARD

Chapter 1...

Vertical white streaks [Picture 2]

- 1) Dirty machine corona wire - Clean machine corona wire with alcohol and Q-tip.
- 2) Damp paper - Open new ream of paper and/or get a dehumidifier. Store paper in an airtight container, possibly with desiccants.

3) Dirty cartridge corona wire (copiers only) - Clean the corona wire with the cartridge corona wire cleaning tool. See appropriate machine maintenance article.

#ENDCARD

#TAG C1S13P3.pct

#CARD

Chapter 1...

White spot or blotch [Picture 3]

- 1) Dirty machine corona wire - Clean machine corona wire with a Q-tip and alcohol.
- 2) Paper surface is wet - Use a different batch of paper and dehumidify the room.

Grey

Light print

- 1) Density setting on light - Adjust the density dial.
- 2) Cartridge "break-in" period - Print 50-100 pages.
- 3) Cartridge Tabs - Adjust cartridge tabs (See Tabs p. 136).
- 4) Missing spring in cartridge - Return it for repair.
- 5) Cartridge gapped too tight - Return it for repair.

#ENDCARD

#TAG C1S13P4.pct

#CARD

Chapter 1...

Thin grey streaking from top of page or blur from bottom of print  
[Picture 4]

- 1) Dirty fuser wand - Clean or change fuser wand.
- 2) Paper hitting cartridge drum because it is too thick or wavy - Use different paper or dry & flatten paper before using.

Ghosting of previously printed images, typically from same page

- 1) Lower Fuser roller may be dirty - Run 20 or more blank pages.
- 2) Upper fuser roller not cleaned by fuser wand felt - Install or replace felt.
- 3) Cartridge wiper blade is improperly positioned or aged - Return for repair or replacement.

#ENDCARD

#TAG C1S13P5.pct

#CARD

## Chapter 1...

Regular spots of grey or black background [Picture 5]

- 1) Humidity too high or too low (graphic toner is particularly sensitive) - Adjust humidity of room.
- 2) Static charge built up - Ground the cartridge by touching the metal contacts to a grounding wire or grounded water pipe.

#ENDCARD

#TAG C1S13P6.pct

#CARD

## Chapter 1...

Consistent, evenly spaced "shadow spot", usually 3 or 4 times per page [Picture 6]

- 1) Drum out of round (EP-S usually). Usually caused by dropping or knocking the cartridge or cartridge wear - Return it for repair.
- 2) Cartridge not properly seated in printer. Printer may be misaligned. - Try removing cartridge and reinserting it.

#ENDCARD

#TAG C1S13P7.pct

#CARD

## Chapter 1...

Marks on back of the page, consistent location [Picture 7]

- 1) Dirty pickup rollers in the machine - Clean the rollers, located over paper tray, with acetone.
- 2) Dirty lower fuser roller - Clean by running 20 or more blank pages. Replace fuser wand felt or run fewer double sided pages. Use appropriate felts.

#ENDCARD

#TAG C1S13P8.pct

#CARD

## Chapter 1...

Smudging or background [Picture 8]

- 1) Humidity too high or too low (graphic and Transfer Toner are particularly sensitive) - Lower humidity.
- 2) Dirty fuser wand - Replace the wand or felt.
- 3) Cartridge gapped too loose - Return it for repair.
- 4) Dirty magnetic bar (evenly spaced 3 or 4 times down the page) - Return it for repair.

#ENDCARD

#TAG C1S13P9.pct

#CARD

Chapter 1...

Spotty, grey, vertical line [Picture 9,10]

1) Dirty separation belt, line on right edge of paper (series I laser printers and PC 10 through PC 25 copiers only) - Clean the separation belt.

2) Loose toner from handling - Print 10-20 pages.

3) Fuser roller wear (line will match location of wear on the fuser roller) - Replace the fuser roller.

4) Humidity too high or low - Adjust the room's humidity.

5) Dirty paper feed rollers - Clean the rollers.

#ENDCARD

#TAG C1S13P10.pct

#CARD

Chapter 1...

repeat with new image

Spotty, grey, vertical line [Picture 9,10]

1) Dirty separation belt, line on right edge of paper (series I laser printers and PC 10 through PC 25 copiers only) - Clean the separation belt.

2) Loose toner from handling - Print 10-20 pages.

3) Fuser roller wear (line will match location of wear on the fuser roller) - Replace the fuser roller.

4) Humidity too high or low - Adjust the room's humidity.

5) Dirty paper feed rollers - Clean the rollers.

#ENDCARD

#TAG C1S13P11.pct

#CARD

Chapter 1...

Black

Blurred print or print too dark [Picture 11]

1) Density setting on dark - Adjust the density dial.

- 2) Cartridge Tabs - Adjust tabs (See Tabs p. 136).
- 3) Printer overheating - Make space around machine. Vacuum the printer's vents. Change the ozone filter in the printer.
- 4) Low humidity - Adjust room humidity. Use a higher grade paper.

#ENDCARD

#TAG C1S13P12.pct

#CARD

Chapter 1...

Random, solid black vertical lines like paint drips [Picture 12]

- 1) Dirty cartridge corona wire (EP, EP-S, EP-F and MP-N cartridges only) - Clean cartridge corona wire with the cartridge corona wire cleaning tool. See appropriate machine maintenance article. Do not use this tool's felt for cleaning in the machine or you may dirty it. Vacuum tool if it is dirty.

#ENDCARD

#TAG C1S13P13.pct

#CARD

Chapter 1...

Consistent, vertical, thin, black line [Picture 13]

- 1) Dirt on fuser assembly claws - Clean the claws under fuser assembly lid.
- 2) Fuser assembly wear - Replace the fuser roller.
- 3) Scratch on cartridge drum - Return for replacement of drum.
- 4) Hair making contact between drum and cartridge corona wire - Clean cartridge corona wire.

#ENDCARD

#TAG C1S13P14.pct

#CARD

Chapter 1...

Pin mark, evenly spaced in consistent vertical line [Picture 14]

- 1) Programmed into document (ie. a period or a dash) - Correct document
- 2) Pin mark on the cartridge drum (usually appears 3 or 4 times per page) - Return for drum replacement

#ENDCARD

#TAG C1S13P15.pct

#CARD

Chapter 1...

Random spotting [Picture 15]

- 1) Dirty glass (copiers only) - Clean the glass.
- 2) Dirty fuser roller wand - Clean or replace fuser roller wand.
- 3) Marks originally on the paper being used - Use paper most appropriate for your needs.

#ENDCARD

#TAG C1S13P16.pct

#CARD

Chapter 1...

Black pages & “lilypad” pattern [Picture 16]

- 1) PC cartridge not inserted all the way into the machine - Push cartridge snugly into the machine so that complete electrical contact is made.
- 2) Broken cartridge corona wire - Return for repair.

#ENDCARD

#TAG C1S13P17.pct

#CARD

Chapter 1...

Wavy background & halftones [Picture 17]

- 1) Too high a charge on toner - Return it for repair.

#ENDCARD

#TAG

#CARD

Chapter 1...

The procedures for rectifying and preventing difficulties with printer output are often simple and effective. Even before using a cartridge, proper storage and care is important. Store the cartridges



in a dark, temperature stable area to prevent overexposure of the drum and difficulties with humidity. Before inserting the cartridge into the machine, pull the dam and rock the cartridge. Rocking the cartridge helps even out the distribution of the toner within the reservoir. With the large flat side of the cartridge facing the ceiling, tip the cartridge 45 degrees from front to back and side to side. Occasionally a swift side to side shake is necessary if all of the toner has become packed to one side during shipping or storage. For this reason, cartridge should never be held or stored standing on it's end. After rocking the cartridge, it is important to clean the cartridge corona wire. Dirty corona wires are quite often the reason for streaks. Using the small green cleaning tool stored in the machine, insert the small padded end of this tool into the slot covered by a strip of black cellophane . Slide the tool back and forth in the slot approximately six times or until most of the squeaking noise has stopped. (See machine cleaning articles for more info.)

The darkness of the print can be adjusted with the density control located in the machine. It is also important to remember that a cartridge may not print at its best capacity until the break-in period is complete. On remanufactured cartridges the break-in period is typically 50-100 sheets. For new cartridges, it may be as many as 100-200 pages. Printing 5 to 10 solid black pages, or 15 to 30 blank pages and a few black pages, can expedite this process. The tabs on the end of the cartridge also affect density. Experiment to find the combination of tabs best suited to your needs. See page 136 for more details.

In the machine are several parts which are easily cleaned. In all but the personal laser printers, there are corona wires located just behind the black, curved, paper guide. With a cotton swab dipped in isopropyl alcohol, wipe the diagonal transfer wires and the lower corona wire which runs the length of the well. These wires are fragile so take care. To clean the separation belt in a series I laser printer or PC10 through PC 25, use a dry Q-tip. Wipe both sides of the small clear plastic belt, located to the left of the paper guide. If you unhook the front attachment of the belt for better access, be sure to replace the belt so it passes over the far roller and under the near roller, as you face the machine. Underneath the fuzzy green lid of the fuser assembly are claws which may be wiped with a dry cotton ball. The paper feed rollers are located on the printer near the end of the paper tray. These rollers feed the paper from the tray into the machine and can be cleaned most easily with a long cotton swab. Lightly dampen the swab with acetone which cleans and softens the rubber. See the appropriate machine cleaning article for more details.

The cartridge drum is critical for quality print. If a drum has a scratch, pin mark or shadow it will need to be replaced. It is sometimes difficult to detect a defect in the drum when a cartridge is low on toner. When the cartridge is refilled, the mark shows clearly on the output. Fortunately, the technology of cartridge drums has

improved and now a more durable drum is available for EP-S, EP-L, and PCmini (A15/A30) toner cartridges. This Emerald Drum is more resistant to scratches, nicks and overexposure, thus providing high quality printing for many more thousands of copies.

You now have many clues which can be helpful in determining the most likely cause of your printing difficulty. When the printer begins to spit out less than quality print, take a few samples and make some careful observations. Match your output with the descriptions above and narrow down the list of possible culprits. May your magnifying glass shine and your investigations be quickly resolved.

#ENDCARD

#TAG

#CARD

Chapter 1...

## Laser Repairs

### CX Fuser Rollers

By John Jeffries

Welcome to the first in a series of articles about repairing common lasers printers and photocopiers. These articles will take you beyond simply cleaning your machine (See the CX, SX, LX, PC and PCmini Cleaning articles for this information) to actually replacing worn or broken parts and returning an older machine to good running order.

With the information in these articles and a few new parts, you should be able to keep your machine in good running order for 500,000 or even 1,000,000 copies. Here at BlackLightning we have several machines that have printed over 500,000 pages, and one that has printed over 800,000 copies. They are still going strong, and we expect to continue using them for years to come.

This article will cover the replacement of the fuser roller, the heater lamp and the fuser assemble fuse in Series I (CX) laser printers such as the Apple LaserWriter, LaserWriter Plus and the HP LaserJet.

These are the machines that use the EP toner cartridge. This technique can be adapted to the Canon PC desktop copiers and Series II (SX) laser printers. Future articles in the The Flash will address these and other machines specifically.

The fuser roller is one of the first items that will need to be replaced in these printers. It is located at the end of the paper path under a (usually green) cover with warnings about high temperatures. Do not take these warnings lightly; when it is running the fuser roller heats up to as much as 180°C (356°F), more than hot enough to burn you in short order. Before beginning to work on your machine, leave it turned off for at least an hour to let the fuser roller cool off. It would be best to do this work before you turn the machine on for the day.

In the machine the toner is deposited on the paper by the photosensitive drum in the toner cartridge. At this point the toner is still a loose power and is only held on the paper by a weak static

electric charge. If you open the machine while it is printing and pull out the paper, before it gets to the fuser assembly, you will see that the toner just rubs off and makes a mess of everything. After receiving the toner, the paper moves to the fuser assembly where a combination of heat and high pressure melts and fuses the toner to the surface of the paper. On exiting the fuser assembly, the leading edge of the paper will tend to stay with the roller and curl up instead of moving out to the paper tray. To make sure that this does not happen, there are four paper separation claws that just barely touch the fuser roller; they peel the leading edge of the paper off the fuser roller and send it out to the output tray. It is these claws that cause most of the damage to the fuser roller. If you open the fuser assembly door and the top roller does not look smooth and evenly colored, it probably will need to be replaced in the near future. The scratches will eventually start to leave a ragged line down the page in the same position as the line on the roller. These scratches will be visible on the roller quite a while before they affect the quality of the print. When you notice the scratches, get yourself a new roller, but don't bother doing the replacement until they are causing a problem.

The heater lamp is another part of the fuser assembly that often fails. The heater lamp is a halogen bulb inside the fuser roller that runs the length of the fuser roller. This lamp heats the fuser roller and will eventually burn out. When you purchase a new fuser roller, also get a new heater lamp. It is a good idea to replace them both at the same time because then you only have to take the fuser assembly apart once. Before it fails completely, a bad lamp can overheat the fuser roller and cause Transfer Toner to streak. When you replace the heater lamp in your machine, it is important to get one of the appropriate power. If the lamp is not hot enough, the toner will not melt completely and it will tend to flake off the page. If the lamp is too hot, it will overheat the roller and cause streaking on the page. This streaking will be especially noticeable if you are using BlackLightning's Transfer Toner. The correct rating for the CX fuser heater lamp is 550 watts.

The final part that may need to be replaced is the fuser lamp fuse. This is a 47W 1/4watt resistor next to the power supply. This is the least likely to need replacing. If you need another one you can purchase an identical resistor at your local Radio Shack or other electronics supply store.

#ENDCARD

#TAG C1S14P1.pct

#CARD

Chapter 1...

Replacement of the fuser roller, heater lamp, and fuse resistor is relatively straight forward and requires a minimum of tools. If you are not mechanically inclined or are unwilling to accept the risks

associated with working on your own equipment, you should have a qualified technician do the replacement. Neither the editors of The Flash nor BlackLightning can accept liability for any damage, injury, or loss you may incur resulting from this replacement. Work gently, slowly, and methodically. Be careful not to damage any of the parts as some of them are fragile and expensive to replace. Please read all directions before starting. When reading these instructions remember that the near end of the fuser assembly refers to the side where the fuser wand is inserted; the far end is the end closest to the printer's main power switch and the power supply.

While doing this replacement, you will have to deal with several different sizes of screws. It is important that you do not get these mixed up. I like to line the screws and parts in the order that I removed them to keep them straight.

#### Tools Required:

Medium size, long, magnetic philips screwdriver

Medium flat edge screw driver

Soft clean cloth

Needle nosed pliers

Important! Be sure to turn off and unplug your machine before attempting any work on the machine.

#### The Procedure:

1. Remove the output paper tray. It is held in place with a tab at each corner.
2. Remove the two screws from the base of the gray plastic end cover on the near side of the fuser assembly. Lift out and place the end cover aside. If it dirty, wipe the cover gently with a clean, slightly damp cloth.
3. Remove the four screws (two at each end) holding the fuser assembly to the printer bottom. Note that one of the screws may be shorter than the others. In our machine (a LaserWriter Plus) the short screw goes on the near side, farther from the paper output tray.

#ENDCARD

#TAG C1S14P2.pct

#CARD

Chapter 1...

This is a repeat of #3 from previous

3. Remove the four screws (two at each end) holding the fuser assembly to the printer bottom. Note that one of the screws may be shorter than the others. In our machine (a LaserWriter Plus) the short screw goes on the near side, farther from the paper output tray.

#ENDCARD

#TAG C1S14P3.pct

#CARD

Chapter 1...

4. Lift the fuser assembly part way out. Unplug the two wires, one at either end. Both of these wires are on plugs for easy removal. The needle nose pliers make it easy to get a hold of the wire on the far side; be sure to grab the connector and not the wire. Do not remove the end of the third wire leading from the top of the fuser assembly to the power supply.

#ENDCARD

#TAG C1S14P4.pct

#CARD

Chapter 1...

5. Unhook the last wire (leading from the power supply to the top of the assembly) from the silver frame on the far end of the assembly.

#ENDCARD

#TAG C1S14P5.pct

#CARD

Chapter 1...

6. Lift the fuser assembly out further. While carefully holding the black lamp holder in place, remove the two screws from the holder on the near side of the fuser assembly .

7. While holding the lamp in place, carefully remove the black lamp holder. It works best to reach in from the top with a finger and push the ceramic lamp end in while removing the lamp holder with the other hand.

#ENDCARD

#TAG C1S14P6.pct

#CARD

Chapter 1...

8. Gently slide the lamp from roller and put it aside. Caution! The lamp is fragile. Do not break it. Do not touch the glass part; handle the lamp only by the ends. Save this lamp by wrapping it in a plastic bag. If it has not blown it may still have some useful life left; it can be saved as an emergency backup in case your new lamp ever blows.

#ENDCARD

#TAG C1S14P7.pct

#CARD

Chapter 1...

9. Remove the two remaining screws from the silver lamp holder on the far end of the fuser roller. Note the position and attachment points of the attached spring. Do not lose it.

#ENDCARD

#TAG C1S14P8.pct

#CARD

Chapter 1...

10. Remove the silver lamp holder.
11. Use the flat-edged screwdriver to gently remove the first C-clip from the far end of the fuser roller. If you spread the C-clip too far it will break; that would not be fun. Be careful not to let it spring off into never-never land. Try to spread it enough to get another tool under the middle; three hands helps here.
12. Gently remove the gray metal gear from the far end of the fuser roller.
13. Remove the retaining screws from the silver, rounded, diamond-shaped, fuser roller bearing on the near end of the fuser roller. This bearing has a black ring on the inside.
14. Gently slide the roller out of the fuser assembly.
15. Remove the outer C-clip from the near end of the fuser roller.
16. Remove the bearing from the fuser roller. Note the position of the bearing.
17. Remove the third inner C-clip from the near end of the fuser roller. Carefully note the near end of the fuser roller and identify it on the new fuser roller.
18. Clean the sensor elements in the fuser assembly with a Q-tip and isopropyl alcohol or acetone to remove buildup.

You have now removed the old, worn parts . It is now time to reverse the process and install the new fuser roller and heater lamp. Be very careful handling the new heater lamp. Please read the warning that comes with it. The heater lamp is very sensitive to scratches, cracks, finger prints and dirt. It should be handled as little as possible and with great care.
19. Place the third C-clip on the inner groove of the near end of the fuser roller. This end is not slotted and has two grooves for the C-clips.
20. Place the bearing on the near end of fuser roller. Remember that the thick part goes on the inside.
21. Place the second C-clip on the outer groove of the near end of the fuser roller.
22. Gently slide the fuser roller back into place in the fuser assembly. Be careful not to scratch the roller. Be sure to get the bearing all the way into the hole in the housing.
23. Replace the two retaining screws on the bearing at the near end of the fuser roller.
24. Replace the gray metal gear on the far end of the fuser roller.
25. Replace the first C-clip on the far end of the fuser roller.
26. Hook the spring back onto the silver lamp holder and secure the holder with the two screws. That spring is very important, so be sure to get it in the right position.
27. Very carefully insert the fuser lamp from the near end of the fuser roller. Caution! The lamp is fragile. Do not break it or touch the glass part. The nipple half of the lamp should be inserted first. The far end should seat in the copper contact in the silver lamp holder at

the far end of the fuser roller. Note that the nipple should point towards the sensors that you cleaned off in step 18.

28. While holding the lamp in place so that it does not touch the inner sides of the fuser roller, replace the black lamp holder seating the near end of the lamp on the copper contact of the black lamp holder. Replace the two retaining screws for the lamp holder.

29. Reattach the wires to the fuser assembly.

30. Reseat the fuser assembly in the printer.

31. Replace the four screws holding the fuser assembly to the bottom of laser printer. The short screw goes in the near side and closer to the transfer wires. If during testing you find that you get paper jams as the paper enters the fuser assembly, then the position of the assembly must be adjusted. Do this by loosening these four screws and moving it.

32. Replace the end cover and the two retaining screws on the near end of the fuser assembly.

### Testing

Place a fuser wand and cartridge in your laser printer, close it, plug it in and turn it on. The green light should flash. If the green light fails to go on through the warm up period or does not come on at all, turn off the laser printer and check all the connections to the fuser assembly. Retest and if this does not solve the problem, the fuse in the power supply beside the far end of the fuser assembly may need to be replaced.

#ENDCARD

#TAG

#CARD

Chapter 1...

### OPTIONAL

Replacement of heater lamp fuse:

This is almost never necessary but the fuse can be purchased at Radio Shack or any good electronics store. The fuse is a socketed 47W 1/4 watt resistor. It is important to get one of this value; if it has a higher power rating, it will not burn out when it is suppose to and this could cause damage to other parts of the machine. This should only be attempted if you are familiar with soldering and the ohm meter.

Tools:

An ohm meter or continuity meter

A small soldering iron

Solder

Philips head screwdriver

1. Turn off and unplug your laser printer.

2. Remove screw from far side of power supply.

#ENDCARD

#TAG C1S14P9.pct

#CARD

## Chapter 1...

3. Remove the power supply cover.
4. Unplug the fuse plug from its socket on the underside of the upper circuit board.
5. Check the resistance of the fuse. It should be 47W. If the circuit is open, replace the fuse by clipping out the old resistor and soldering in the new resistor.
6. Replace the fuse & holder in its socket on the circuit board.
7. Replace power supply cover and its screw.
8. Test the laser printer again.

This concludes the replacement of the CX fuser assembly parts. With a bit of mechanical finesse, caution and careful work, your printer is ready for tens of thousands more pages of quality printing.

#ENDCARD

#TAG

#CARD

## Chapter 1...

### Blacker Blacks

Use spray-on enamel such as Blair Clear Spray to make large black areas on laser printed artwork a uniform, solid black. Use a fast drying clear spray enamel or acrylic - available at art supply stores, but a lot cheaper at your local hardware or discount store (typical price \$1.49). Once you laser-print your art, find a well ventilated area. Spray a quick light coating of enamel onto the page. Be aware that fine detail may "melt" a little. Try to avoid spraying these areas, either by directing the spray or by cutting a mask that exposes the target area. Sprayed blacks darken, solidify noticeably, and become glossier and scratch resistant. Use the results as camera ready copy for printing, or as final artwork for presentations, signs, etc.

#ENDCARD

#CARD

## Chapter 2

### Desktop Publishing

It is easy to say that without laser printers, there would be no desktop publishing. Laser printers have revolutionized the way that individuals, small businesses, and even big businesses produce letterhead, newsletters, brochures, and even real books. With laser printers, our literature can be printed on demand, and we dare to do



projects that previously were only handled by specialists and full scale graphics studios. The laser printer has broadened our access, driven many of us to learn new skills, and given us greater control over our written words, often resulting in better quality communications.

#ENDCARD

#CARD

Chapter 2...

Rolling Your Own

Part I: Planning & Writing

by Walter Vose Jeffries of BlackLightning

from The Flash volume 2, issue 2

Newsletters are a bountiful resource and an educational experience for both writers and readers. For the entrepreneur they are a way of educating customers, reaching people who might not otherwise find out about your products, providing technical support, and consolidating many articles into one easy to distribute self-mailer. A newsletter can effectively organize and consolidate multiple pieces of literature and information, creating a particularly useful reference material. At the same time, updates on the latest developments are easily shared. Before we started our newsletter, we were sending out anywhere from five to fifteen separate pages of information that had to be printed, collated, and stuffed for each customer. The Flash, our newsletter is a single booklet with all our product information. All it needs is a stamp and an address label to go out the door.

For the reader, informative, well thought out articles, and practical tidbits are a find to be treasured. Including valuable reference material turns your newsletter into a keeper that customers and readers will refer to again and again. Enthusiastic readers may respond with ideas and information to be shared, and people remember sources of good information, possibly giving the newsletter a life of its own. This means good name recognition for you and your products because your newsletter, cum literature, will be passed around to more people than would see just an ad or flier.

Where to Begin

The first step in creating a newsletter of your own is to find a focus. What is the purpose of the newsletter? Consider the issues and the topics which will serve the project goal. For ideas listen to the questions and comments made by customers, members and other potential readers. At BlackLightning, we spend much of our time on the phone with customers explaining the operation and maintenance of cartridges and printers. Consequently, we are careful to address these topics in every issue of The Flash, and we always receive many thank-you's for these articles.

Think of a catchy title for the newsletter that will communicate your goal creatively. Cover updates on research and current events relevant to the audience. A calendar of upcoming events may be useful. Interviews add a nice, personal touch. If product information is to be included, be very careful not to confuse product hype with news. Newsletters of pure propaganda or solicitation are often a waste of the readers' time, and may land in the trash.

The balance of editorial/reference material to sales literature in your newsletter is important. Too much glitzy sales pitch and it is just a brochure. Too much editorial content and you may not get your sales message across and sell your products. In The Flash we have three sections, pure Editorial which occupies about half to two thirds of each issue, Information telling who we are, what equipment our products are compatible with, and answering common customer questions, and The Catalog containing our product listings, prices, order forms, and terms of sale.

The Editorial section changes every time with new articles, some of which are not even related to our products but are of interest to our readers. Writing those twenty to thirty pages each issue is the biggest challenge and the most fun. This is where you can catch the eye of people who are potential customers but who may not be ready for your products yet.

The Information section stays basically the same for us for each issue. This is where we answer the most common customer questions, have a machine compatibility chart and explain who we are and why the customer should consider us as a source. We have a page about special services and programs such as our Finder's Program rewarding people for finding us new customers.

The Catalog is where we make our sale. This is our time and the appropriate place to make the sales pitch. Consider yourself as an advertiser in your own magazine. Don't forget to include an order form, any terms and conditions as well as warranty information. Make lists of information you want to include in your newsletter in each category. Then make some rough sketches or even hand drawn mockups on plain paper. Show these to friends and get some critical feedback.

#### How Much and How Many

In order to put the big picture of this project into perspective, consider the factors controlling its size. How many copies will be needed? Will you be sending to all your existing customers? Don't forget new contacts that will come in between issues. Will the newsletter be one folded sheet or many pages of information? To calculate the number of copies to print, begin with the initial mailing list. Add to this the approximate number of requests to be filled between the initial mailing and the next issue. These numbers will provide an approximation of mailing size. Consider the cost of sending out these mailings. The post office is a wealth of information

on the ways and means of getting out large mailings and we'll cover bulk mailing later in this series. For the size of the newsletter itself, approximate the number of pages and the page size needed to print the planned articles. (For The Flash we get about 1,000 words on each Flash page.) Bring these factors together to calculate the potential printing and mailing costs. As with most endeavors, the amount of budget and time available will have an effect on the size and scope of the project.

A good print house is an invaluable resource at this point, because one of the most important things a printer does, besides printing, is providing cost estimates. Find a printer who takes pride in providing good service. We have found that it is well worth paying a little bit more for quality service and printing. The extra hassles of less than perfect service, time or cost over-runs, delays, and misprints, are much more expensive in the long run. The printer should estimate for you the cost per piece, depending on how many copies you plan to order. For example, an order of 2,500 copies may cost 30 cents per piece where the same publication may cost 15 cents per piece in a quantity of 15,000 copies. A good printer will work with you and your budget, so shop around.

#### Begin at the End

Realistic planning can mean the difference between a nightmare and a success story, ulcers and a smile. Allot a generous amount of time for each task. Give writers initial deadlines that are not critical. This extra time margin is a blessing when it is necessary to postpone a deadline. Draw a time line indicating important milestones, due dates and who is responsible for each task. This schedule can be posted for everyone involved to see. MacProject is the software used at BlackLightning in designing the schedule for The Flash. There are many excellent software packages available for project planning and plain paper also does the job. Check out your favorite computer magazine for more information.

The planned mailing date of the publication will be the foundation of the time line. With calendar in hand, start at this date and work backwards. How long will it take to add flyers to the printed newsletter, label, stamp, sort, bundle and transport to the post office? If these processes will take approximately one week, count back one week on the calendar and your finger will be on the date to have the publication back from the printer. The printer will be able to estimate how long the printing will take. Experience with your printer, and talking with their references, will give you a sense of the accuracy of their estimates. Count backwards again for the final layout and editing date. Continue to work back in time this way until the first organizational meeting date is set. Key milestones include: organizational meeting, article outlines, first drafts, second drafts, final article, layout begins, final editing, linotronic complete, send to printer, back from printer, and date to be mailed. Other time lines to

be included in the schedule are getting advertisers (contact, send media kits, get commitment, receive ad copy), designing inserts such as postcards or samples, drawing or acquiring illustrations, processing photographs, choosing a printer and preparing mailing lists.

### Using Your Resources

When planning the newsletter consider the resources, special skills and talents available. Who is particularly articulate? Have them do an article or two. Team the efficient researcher with a writer. If there is an artist in your midst, have them work on illustrations, diagrams, or a cartoon or comic strip. Who has a good eye or layout experience? Show off skills and use individual interests to the publication's advantage. Also, keep in mind the learning experience for the writers. They are bound to learn a thing or two in the process of putting together their articles and a good manager can make the most of this teaching opportunity. In the big schedule, indicate who is doing which tasks. This will facilitate both communication of information to the right people and clarification of who is responsible for which tasks.

Don't overlook local talent that can be subcontracted. There are probably graphic artists, writers, and others in your area who may be interested in contributing. Barter for articles: an ad in your newsletter, a credit towards products that the writer needs, or an exchange of services. Be creative.

### Write On

Allow plenty of time for writing the text of the articles, and divide this time to accommodate each step of the process. Set a deadline for the outline, first draft, second draft and final copy. Between each step, set a block of editing time, even for the outline. Feedback is enormously helpful, and with every draft there is the domino effect of brainstorming, where the ideas get better and better. We find that having several people editing each draft is helpful. The end result is more than what one individual alone could do.

An important note about notes is to emphasize to everyone involved that feedback is a positive part of the process. Some of the suggested changes will be necessary either for clarity or correction of the facts. Others may be a matter of opinion. Sometimes editors will make conflicting comments on the same sentence. This leaves a judgement call for the writer and the final editor. Keep these distinctions in mind and at the same time remember, it is important that all feedback be carefully considered. People who are not used to having their work returned with plenty of red pen marks may initially feel discouraged, and people new to editing may be hesitant to make too many comments. Make it clear that constructive criticism is a blessing. It means that the writer is not isolated with this task. They have the support of the editors who are also working towards the

goal of producing a quality publication.

Between writers and multiple article editors, the logistics of getting one piece of paper to all the right people can be tricky. At BlackLightning, each outline and draft is placed in a central “to be edited” box where everyone has access to the copy. When the articles are not being read, they are readily available. The editors read, write comments, and then initial the copy. Those who are not familiar with the topic are particularly helpful. Like many readers, these editors have an outsider’s perspective, and their feedback will ensure that the text is clear and understandable. At BlackLightning, everyone edits.

It is helpful to clarify from the beginning some basic editing marks and rules for writers and editors. It is not necessary to know the full table of editing marks used by professional publications, but the following indicators are quite helpful. Double underline of a letter means change case, a slash through a letter means lower case. ¶ means paragraph should begin here. Looping slash means delete -- this may be referring to a character or a space. SP means check the spelling.

Know how your system for layout functions. For our particular computer layout programs, it is important that writers do not do any formatting in their copy. This means that tables, font, type size changes, and special indentations are all to be done during the layout phase. It saves time and energy if writers know this from the start.

### The Small Stuff

Little things are important. We have a lot of fun with our Flash Bulbs, and they are a great place for quick announcements, helpful hints, and late breaking news. A “what’s next” feature, listing topics planned for the next issue, is a good idea. A letter from the president or director adds a personal touch. Consider a cartoon or comic strip. Titles for all of these little gems can be catchy and creative. Play with the words. Use puns and ideas to create a theme or a chuckle. We’ve found that this special touch will make the newsletter more readable, unique and memorable. Blurbs are also great breakers when it comes to layout, making for eye-pleasing copy.

Another very useful feature is the Reader Response Card. This has the potential to bring to your mailbox loads of priceless information. Keep it short and sweet. A little motivator, such as putting the cards into a drawing for prizes, or offering a discount on products, can be a nice “Thank You” for the reader’s time and trouble.

### Final Thoughts

A caution to the editor: Keep the schedule moving. People respond well if given short term goals and reminders of deadlines at appropriate intervals. Have the big schedule available for all to see, but emphasize the tasks one at a time and let the article editors and writers focus on the next step without having to worry about what

needs to be done two weeks from now.

Even with all the planning and forethought, it seems in the end, there is inevitably a time crunch. Plan on that too. Persist and it will be well worth the trouble. It is an exhilarating feeling to see the final creation and enjoy the sense of team effort that comes from the completion of a job well done. The Flash has been an appreciated resource for our readers. It is a great way for us to spread information about printing.

### Pulling the Plug

On the LX (EP-L) laser printers, such as the HPIIP and Apple Personal LaserWriters, if there is an erroneous "needs service" message blinking, it may be necessary to turn the machine off and pull the plug before the message will go away.

#ENDCARD

#TAG C2S2P1.pct

#CARD

Chapter 2...

### Perfectly Binding

Desktop Bindery Comes of Age

by Walter Vose Jeffries of BlackLightning  
from The Flash volume 4, issue 2

In the 1980's desktop publishing was coined and quickly took hold, bringing to the masses the power of their own printing press and computerized layout. While laser printers and personal computers gave us the ability to easily typeset, layout, and print our own newsletters & books like a professional. One element was still missing: the binding. Yes, you could saddle staple a newsletter; but larger documents, like long reports and books, tended to be hole punched or at best spiral bound. Real, perfect binding equipment was too expensive for the small desktop publisher. Your typical paper back book is 'Perfect Bound' -- all the pages are on edge and glued to a cover stock along the binding edge. This high quality book look binding goes a long way to making desktop publishing look professional. We had previously looked at systems that did binding and found the cost for a good quality system to range from \$700 to over \$3,000; well out of the price range of most desktop publishers. Enter Avery/Dennison. The 1st Impression, from Avery/Dennison, uses binders consisting of a clear plastic front and an opaque back. The binding glue is a solid non-sticky, strip already placed in the binder. To bind a report, simply print your document, place the pages in order inside the binder, and place the binder in the heating unit. 30 seconds later the unit beeps. Remove the report and allow it to cool for a minute. Presto, a professionally bound report! The

binders come in many sizes for binding different numbers of pages (1-240 sheets). The clincher is the price. Only \$379 for the binding machine and about a buck per binder. This unit should be a hot seller with desktop publishers, small software developers, and corporate departments that need to produce a slick, perfect bound report. Now, you could do the same thing with a hot glue gun and some cover stock, but the machine makes things much easier. One idea that we have been considering is to make our own custom covers. We would apply a strip of heat glue with the glue gun, then put the pages and the cover into the binder machine. This would allow us to print our own covers and retain the convenience of using the binder machine.

### Late Breaking News!!!

Just as we were going to press, we received a DuraBind unit from Ibico of Elk Grove, Illinois. Based on the spec sheets and our first day with the machine, it is functionally identical to the Avery/Dennison 1st Impression with a couple of important differences. According to the spec sheet it draws just 1/10th the electrical power and costs a mere \$149 list. After using both, we'd call the 1st Impression the Cadillac and the Ibico the Escort. They'll both get you there, but with different features and costs. We also received samples of really slick pocket folders that can be used as binders with the machine. On the con side, it is not as automatic and the case is not quite as well designed (separate document holder, no press fingers). Binders are about the same cost as the Avery/Dennison ones and Ibico is offering custom binders printed in 4 colors based on your artwork (film). This means you can actually produce books with full color covers that look and feel totally professional. Book-on-Demand publishing is here to stay!

1st Impression	DuraBind
Avery/Dennison	Ibico
321 Fortune Blvd	760 Bonnie Lane
Milford, MA 01757	Elk Grove, IL 60007
1-800-677-5150	1-800-323-5373
1-800-424-7742 FAX	1-800-448-5268 FAX
Reader Response Number 45	Reader Response Number 46

[Picture 1]

#ENDCARD

#TAG C2S3P1.pct

#CARD

Chapter 2...

Rolling Your Own

Part II: Laying It on the Line

by Walter Vose Jeffries of BlackLightning  
from The Flash volume 3, issue 1

In the last article we covered why you might benefit from a newsletter, getting organized, and writing the articles and pieces for a newsletter. Now, it is time to give it form. Layout and design bring the ideas together, presenting them in an inviting format.

Advertisements may add important visual breaks to the composition as well as bring in some financial backing to the endeavor. At the same time, ads are filled with product and contact information that is likely to be of interest to your readers.

#### A Quick Note on Advertising

To ad or ad not, that is the question. Initially it will be difficult to entice advertisers with an unknown, yet to be published, newsletter.

Starting with low cost advertising space may help to cultivate interest. Consider some creative wheeling and dealing. Exchange ads. Exchange articles for ads. Exchange ads for services. For example, would the linotronic company that will be printing the newsletter like to have an ad as partial payment? The first advertisements will establish the legitimacy of advertising in the publication. Later, people may start to request advertising space.

The first question is, who may be interested? List organizations that are related to you, but do not compete with you. Think about who might be particularly interested in reaching your audience. Don't overlook your readers as a potential source of advertisers. You have a resource. A mailing list of people with particular interests is a marketing treasure. The advertiser knows the value of a well targeted list of readers. This is your negotiating chip. Put together a media kit showing off your publication. Include readership demographics and, if possible, a map showing where they are located. Don't forget to list your ad rates and deadline dates. Contact the organizations most likely to be interested and introduce your publication. After sending out your media kit, be sure to make a follow up call and don't forget the option of creative bargaining.

Allow adequate time. Once a commitment to advertise is made, the advertiser will need time to send the ad copy before the final layout deadline.

#### Layout and Design

With the written material in hand and the advertisements ready for print, the next task is presentation. If the resources are not available to do the layout work of the newsletter in-house, there are many desktop publishing companies and graphic designers who can be of assistance. When researching these options ask about the time frame they can offer and degree of control you will have over the work. Determine their area of expertise and consider how that fits your



particular publication. Look at samples of their past work. This is the best indication of their quality and style.

Doing the layout in-house allows maximum control. Software programs used for the layout of our newsletter, The Flash, include, ReadySetGo, Adobe Illustrator, Microsoft Word and MacDraw. Other programs of interest to editors and publishers are Aldus PageMaker, Ventura Publisher and Quark Express. Consider subscribing to a magazine like Publish for a wealth of information on desktop publishing. You don't have to even use computers, but it makes the job a LOT easier...

The first step is to establish the format. Will the size be half page, full size or something in between? Some newsletters may fit nicely into a one-fold piece. Others need the space of a six-page foldout or bound booklet. Some readers appreciate a full page newsletter which can be hole punched and put into a binder. On the other hand, an unusual size or paper color will help the publication stand out in the midst of a busy desktop.

### Organization

Piecing the puzzle together in a logical order is the challenge of mockup. Group together similar information such as news articles versus product information. Articles that must jump from one page to another should be in a logical order and the pages correctly indicated. Check that illustrations are in a logical location and easy to reference. Place the table of contents on the front or just inside the booklet. Again, be sure to double check page numbers. Use ads, small blurbs or cartoons to break up long runs of text.

On the front page is the masthead. Include the organization's logo, the date of publication, issue and volume numbers. If it will not be sent in an envelope, include the return address, space for the address label, and the post office imprint or space for the stamp. It may be helpful to attract the reader to an inner page with an announcement on the front such as "see page 5 for new products."

Once a logical order to the mock-up is established, look at the piece from an aesthetic perspective. The spaces, proportions and distribution of illustrations should be carefully considered and guide the eye across the page. Well spaced ads are more likely to grab the reader's attention and can be used to create a pleasing composition. There is a fun variety of fonts available. Be careful not to use so many that it becomes chaotic. Balance the readability of these options with space and style. Use the contrast of bold and fine lines to frame and define the composition. For example, the body of The Flash is set in Palatino, which is a readable serified font. Headlines are done in Bookman, and headings between passages in Bold Helvetica to offset them from the articles. In the letters to The Flash, the responses are italicized. Look over other newsletters and identify elements of style you like. Feel free to borrow and modify anything you see.

## Ink & Press

Finding a quality print shop is important. Look in the yellow pages under Printers, Desktop Publishing Services, or Publishers. Ask around. Word of mouth is often very revealing. You can even ask the printer for the names of a few of their regular customers to call as a reference for them. Take a close look at their previous work. Do some price shopping and get to know the market. There are many factors affecting printing costs: number of copies, paper, size, number of pages, colors involved and use of bleeds. Keep in mind that it is not always prudent to go with the cheapest vendor. Ask questions and look for a company who is interested in providing both quality and service.

[Picture 1]

## The Final Word

When everything is just right, it's time to proof it once more! This is your last chance to catch mistakes without incurring extra costs. Don't rush. Make sure it is right. Finally a mechanical needs to be made. Linotronic copy will provide the cleanest possible print. The publisher may be able to have the Linotronic work done if the documents are provided on disk.

Laser copy at double size on LaserPlus paper will also work. For the richest, darkest black from the laser printer, print 4-5 solid black pages just before printing the final copy of the document. This process primes the cartridge drum, ensuring that it will produce the best possible copy. When using the laser printer for the final mechanical, a graphics or hi-res cartridge is recommended. If you print the mechanicals with graphics toner, be sure to print it oversized and have it photo-reduced. The graphics toner tends to print the solid black areas very well but the small letters in the text of the articles will probably look a little more bold than you expect. If you use a hi-res toner in conjunction with a high resolution (at least 600dpi) printer, you may be able to print the mechanicals at actual size. This toner will print smaller text better than the graphics toner and the strokes will not look quite as thick. However there is a trade-off; the solid blacks will not look quite as good. This should not be a problem when creating the mechanicals because when the printer makes the plate there is some dot gain; the lines in the solid blacks get filled in. It is best to take a sample of the printed output to your printer and get their opinion of how it will look.

If you decide to print the mechanicals with a laser printer, you may want to consider one of the high resolution printers available. These printers use the same Canon cartridge as your regular 300dpi printer, but they provide output at 600dpi to 1200dpi. Even moving up to 600dpi makes a world of difference in the quality of the output, especially the pictures with halftones. See page 111 for a review of the Xante Accel-A-Writer.

Again, planning for adequate time can avoid headaches. Contact the printer early in the process and get on their schedule. They will need time to order and receive the paper for the printing. Keep in touch and let them know about pertinent changes as they arise. Printers are a wealth of information on paper choices. Ask for samples. Don't forget that the weight of the literature affects mailing costs and choice of paper can make a significant weight difference. On the other hand, a substantial paper adds a feeling of quality to the publication. Check the transparency and show through of the ink on the sample paper. There are coated (glossy) and uncoated (newsprint) papers. Colors and textures are available in a wide array of combinations. Consider using recycled paper. Unfortunately, recycled paper is sometimes more difficult for printers to use and may be more expensive. Ask your printer which types they find work best.

Getting a well done piece out the door and into the printer's hands is always a sigh of relief. Time to take a well-earned little breather while the printers do their work, and prepare yourself for the big mailing day, or days as the case may be. With the creative process complete, the newsletter is coming into the home stretch and will soon be in the hands of many appreciative readers.

#### Don't Always Believe What You Read

When the laser printer starts blinking "toner low", it may not be so. Of course it is important to have the next cartridge and a back up on hand. But, do not hesitate to keep using a cartridge that is low on toner. As long as you are getting satisfactory print, it will not hurt the printer to keep going. If you stop using the cartridge before it is truly empty, then you are just wasting toner, resources and money...

Right!

"Supersonic F-16 fighter planes may actually exceed 400 mph at times..."

-from an AP news story

#ENDCARD

#TAG

#CARD

Chapter 2...

Not Quite - Ready,Set,Go! 5

by Walter Vose Jeffries of BlackLightning

We were excited when we heard that Ready,Set,Go! (RSG) version 5 was soon to be released, and that the original developers, Manhattan Graphics, once again had control of the program. We have used a lot of different page layout programs on the Macintosh and RSG is by far our favorite. We are reminded of this whenever we receive a document in PageMaker. RSG is much easier to use, more consistent,

more Mac-like and more powerful than PageMaker. In our minds, the only serious competition for RSG has been QuarkXpress. Unfortunately, our excitement was short lived. ReadySetGo 5.10, is a definite step up in capabilities from RSG 4.5a, but there are problems.

#### The Good News

ReadySetGo 5.0 has a lot of improvements. The rotation tool is something we have wanted for years and were very glad to see. It makes it much easier to prepare complex tables right in RSG as well as the obvious, writing sideways or at an angle. We used this on page 137 to create the table of transfer techniques which was too large to fit upright on the page. Previously we would have done the table in another program and imported it as a picture. A hassle avoided.

Another big feature we had wanted was printing just the even or odd pages. This makes doing book-on-demand work much easier as you can then feed the pages back through the printer and print their other sides.

The dialogs and menus are all arranged in a much more consistent fashion and RSG5 makes heavy use of single level hierarchical menus. A big improvement that makes using the program easier. The Windows command in the Document menu is a godsend, making it much easier to switch between several open documents. This feature was long overdue but has been implemented with an added little twist that is great. Documents that have unsaved changes are underlined in the submenu. A real plus!

#### The Bad News

None of the problems stopped us from switching to the program, but they make life difficult. We ran our tests on a MacPlus, an Outbound, and a MacIIci under System 6.0.7 and System 7. In all cases we had allocated more than 2Meg of RAM to RSG and in most cases more than 4Meg. We tried it with and without system extensions and inits installed. None of the files were larger than 1.2MB and we have plenty of free disk space. There were so many problems, and so many crashes we can't list them all here. A lot of them revolved around problems between RSG and ATM 2.0. None of these problems existed in RSG4.5a. Manhattan Graphics' only suggestion was to do less complicated documents, run only one program at a time (Finder mode), and dedicate all of the memory to RSG. Unreasonable in this day and age of MultiFinder & System 7 multitasking.

ReadySetGo 5.10 has a lot of nice new features, and some problems. We're glad we upgraded, but would like to see these problems fixed.. If and when we do, we'll talk about it in The Flash.

Manhattan Graphics, 250 E. Hartsdale Ave, Hartsdale, NY 10530 1-800-572-6533 RR#44

#ENDCARD

#TAG C2S5P1.pct

#CARD

## Chapter 2...

### Rolling Your Own Part III: Mailing It Out

by John Jeffries of BlackLightning  
from The Flash volume 3, issue 2

In this final article of our three part series on producing a newsletter, we cover the last step: mailing options, decoding bulk mailing requirements and planning the logistics of handling hundreds, even thousands, of pieces of mail. The Post Office has a wealth of information on these subjects and most Postmasters are more than glad to help. Unfortunately, finding the answer to a particular question can sometimes be like looking for a needle in an informational haystack. Hopefully, our experiences will give you a basic understanding of the mail system and help smooth the way.

#### Stamp On

There are three postage options to consider: stamps, a meter, or an imprint. Regular postage stamps may be used for any mailing. If there is a sizable number of pieces going out, then the labor required to put the stamps on may be formidable. A postage affixer, which takes rolls of stamps, may be purchased at the post office. Otherwise, divide the sheets of stamps into strips and use a damp sponge. These are easier to handle than individual stamps.

Some companies rent meter machines (approximately \$18/month in VT). The meter is taken to the post office to be set by a postal worker. You pay for the postage that will be needed for the next few of months. This eliminates the need to keep stamps on hand, and, since you can set the meter to issue a stamp for any amount, there is no more scrounging for the correct postage amounts.

We use an imprint printed on our newsletter where you would normally place the stamp. No licking, no sticking. An imprint permit must be purchased at the post office which will process the mailing for a one-time fee. A permit number is issued to the organization and may be used for future bulk mailings. Directions are given by the post office on how the imprints must be worded and laid out.

Imprints eliminate the high labor costs of putting stamps on the newsletter. But, you must mail at least 200 pieces each time you use the imprint.

#### The Mailing List

Most likely you already have a database of people to mail to: your membership or customers. If you want more addresses, commercial mailing list companies may have just what you need. They can provide lists of people based on known interests. Be careful to check out their guarantees: Will they refund your money if a piece is returned with an undeliverable address?

Bad addresses cost time and money. The simplest test for an

incorrect address is to match the ZIP Code and the state. The first three digits always indicate the state. For a complete listing, ask at the post office for Exhibit 122.63j from the Domestic Mail Manual (DMM); the only exception we have found is that 039 is used for Maine, not New Hampshire. BlackLightning uses another relatively simple method to cull bad addresses; we send out a mailing of First Class postcards with an announcement or ad a month or two before the newsletter goes out. Any undeliverable cards are returned to us and we correct or remove the offending addresses. Postcards are best because they require the lowest postage and, if pre-stamped cards are purchased at the post office, you only pay for the postage and the printing; you save the cost of the paper! Pre-stamped cards may be passed through some laser printers or sent to a print house.

If your mailing list is in a computer format, the post office can add Zip+4 and correct the addresses. This speeds delivery and may also decrease your postage rates. This is a free service provided to reduce the amount of lost and undeliverable mail. Send them a disk or tape with the addresses and they will send you back the list with all the addresses corrected. For more information contact Address Information Services (AIS) at 1-800-238-3150 ext 80.

AIS also offers several ZIP Code directories in both hard copy and computer readable format. These vary from the simple City/State File which matches a city and state to each 5-digit ZIP Code, to the Carrier Route Information with every address on every carrier route across the nation. AIS currently offers these files on three IBM tape formats. If you use a Macintosh, Semaphore Corporation, (408) 688-9200, offers a CD-ROM with the ZIP+4 for every address in the nation. This service includes quarterly updates for \$499 per year.

#### The Post Office

There are three mailing classes you want to consider: first, second, and third. First Class mail is delivered the fastest, undeliverable mail is returned to you and any size letter will be accepted. Of course, you pay for this service with higher postage. Second Class mail is only available for newspapers with paying subscribers. Third Class mail is easiest on the budget, but is likely (though not necessarily) to be slower and undeliverable mail will not be returned to you.

The next question is one of bulk. You get a price break for supplying your labor. Pre-sorted bulk mail may cost 20-55% less than the single item First Class postage. Postage varies depending on the number of pieces, weight and the way it is sorted. There is a certain amount of work involved in correctly sorting, bundling and bagging a large mailing. If this all fits the needs of your letter, and the mailing is more than 200 identical items, then you should consider bulk mailing. Be aware that even if there are more than 200 addresses, bulk mailing is not necessarily the most cost effective route. Take into consideration the various permit charges and the labor of sorting your mailing before deciding.

A bulk mail permit must be purchased from the post office. This

costs between \$60 and \$150 and lasts one year. Keep in mind that your bulk mailing must be delivered to the same post office the permit was purchased. The price of the permit varies from one post office to the next. If the post office is an SCF (Sectional Central Facility), one of the hubs of the postal organization, your bulk permit fee will be higher. On the other hand, your bulk postage rates could be lower, working through an SCF may well be well worth it in the long run.

There are many pre-sort types; we will cover the basic ones. For a complete listing, ask your postmaster for Forms 3600 (First Class) and 3602 (Third Class); these contain comprehensive lists. For a detailed explanation of each sort, consult the DMM. A First Class bulk mailing requires a minimum of 500 identical pieces; a Third Class bulk mailing requires at least 200. Third Class Special Bulk is for authorized non-profit organizations. (See Postmaster for details.) Whenever possible, the post office will use machines to read the address of a piece of mail. This process is called OCR or Optical Character Recognition. Bulk mailings which are "automation compatible," as defined in the DMM (section 520), can be processed through these very efficient machines and get a discount on the postage. Such a piece needs to be within certain dimensions, pamphlets must be properly sealed with tabs, the address must be done in a particular format and placed within a certain portion of the envelope or front cover. Take a mock up of your newsletter to the post office during design stages if your goal is to get OCR rates. They will explain the requirements.

Basic pre-sort is the building block of bulk mailing. It is the minimum sorting required to qualify for bulk rates. Mail is initially sorted by the first five digits in the ZIP Code, then the first three digits and finally by state. All mail that does not fit in these categories.... More later.

3- or 5-Digit sort refers to the ZIP Code. Special rates are available if there are more than 125 pieces going to the same 5-digit ZIP Code, or if more than 125 pieces have the same first three digits in the ZIP Code (ie. 05048, 05055, 05089...).

ZIP+4 means that each piece has the full 9-digit ZIP Code, and the pieces are sorted according to the basic pre-sort requirements. Add a PostNet Barcode and you have ZIP+4 Barcoded.

Carrier Route is sorted to one route. This is useful if sending to a small area. The post office can help determine carrier routes for addresses in your database.

The weight of each piece will affect the price charged, the price increases at one ounce. Third Class prices do not increase until 3.33 ounces. Prices quoted are the per piece rates for the lightest weight category of each class for June 1992.

Note that in a Third Class bulk sort all the pieces receive at least the basic discount. However, in a First Class sort only those in the 3/5, Zip+4 and Carrier Route sorts qualify for a discount. Those sorted to

states and mixed states require the full, single piece, First Class rate.

[Picture 1]

### Labeling and Sorting

The post office will provide the materials, including instructions, bulk mail poster for reference, rubber bands, stickers ("D" , "3", "S" & "MS"), bags and bag labels. You will need to provide the space and labor. For several hundred pieces, a large clear desk or table top will do. When we manually processed our 12,000 to 15,000 Flashes, we would take over an entire large room. The labels need to be printed in numerical order by ZIP Code, starting with the lowest. If there are several people working on labeling, have one person designated to keep the bundles of pieces in numerical order as others work through the sheets of labels. We make columns on the floor, starting at one corner and moving down the row. When there is no more room to extend that row, we start the next. Gradually, we cover the floor with rows of labeled Flashes, all in numerical zip code order. When all the labels have been applied, the sorting begins.

Basic pre-sort involves handling the mailing several times. Each time a more general criteria is used until all the pieces are bundled and bagged. Begin with the lowest numerical ZIP Code. Work through looking for batches which have ten or more addresses with the same 5-digit zip. When you find one, bundle it with two crossing rubber bands and place a D sticker on the top piece. (D stands for direct.) Make the bundles small enough to be held in one hand.

When the end of the mailing is reached, go back to the beginning. This time look for 10 or more pieces not yet bundled that have the same first three digits of the ZIP Code and labelling them with a 3 sticker. This process is repeated a third time for the same state. The remainder are bundled into mixed state packages.

When sorting for Third Class, bags are made of bundles. If there are more than 125 pieces for the same 5-digit zip, they go in a direct bag. If not, those bundles get bumped into a 3-digit bag, and so on. The last Mixed State bag may have less than 125 items in it.

When sorting for First Class, the bundles are placed into trays. If there are enough pieces for one zip to fill a tray at least 3/4 full, make a tray, otherwise put them into a 3-digit tray. If there are not enough 3-digit pieces, they get bumped into the mixed 3-digit tray. The last mixed 3-digit tray may be less than 3/4 full to qualify. All the pieces not sorted to 3-digit (State and Mixed State packages) should be put into trays in numerical order by the zip code. Do not put any rubber bands on these pieces.

Sorting can be done manually, but, if the mailing is than a few hundred pieces, be sure to allocate several hours to the task. It used to take us three days to manually label, sort, bundle and bag 12,000 pieces. This is with an average of two people working full time on it. We now have the computer do all the sorting and we just label and bag. It is much faster. If your addresses are already in a computer, there are several commercial programs (about \$100) for both the



IBM and the Macintosh that will accept a database of addresses and sort it according to the the Post Office requirements. These programs will sort the addresses and indicate how to bundle and bag them. This method requires only a clear table for a work area and saves major amounts of time. When we changed over to a customized labeling system that did the sorting we saved approximately 1.33 hours of work per 1000 pieces: Over 20 hours per Flash mailing! If your mailing list has more than a thousand names, it may be well worth the \$100 for the program.

Here is a time saver we found: We used to break from our work schedule to do the labeling and bagging. That would take us almost a week sometimes and work would pile up. Now we have a mailing party instead. The local kids come up to our place and with the large group of people (8 to 10) we are able to zip right through our 15,000 Flashes in six or seven hours. This is a lot more fun; the local kids enjoy the chance to go and socialize (we are in a very rural area) and we have a pizza & ice cream party afterwards and then everyone makes great custom T-shirts for themselves with our transfer toner. All that remains is to take your mailing to the post office. A hint about postal rush hour, or "rush weeks", is in order. A large mailing sent during the middle two weeks of any month will be processed faster than those sent during the beginning or end of the month. This is because the end of the month is when everybody is flooding the post office with their bills. It is also when most holidays happen to fall. Of course, bulk mailings sent during the pre-Christmas season will be delayed significantly. Also, after the Christmas rush, the post office generally receives lots of bulk mailings. So, for the fastest delivery time, it is best to avoid sending large mailings from late November through mid-January.

This concludes our series. We hope you find our shared ideas, hints and experience helpful. A newsletter can be a wonderful resource for both you and your readers. Good luck! Break a pencil!

#ENDCARD

#TAG

#CARD

Chapter 2...

Self Publishing

Taking Your Book from  
Concept to Market

by Connie Fitz, League of Vermont Writers  
from The Flash volume 4, issue 2

Zillions of words about desktop publishing describe small projects; newsletters; pamphlets; or reports. Yet with only slightly more blood, sweat, and cash, the skills and technology used to produce a newsletter or a pamphlet can result in a "real" book, which may have

greater scope and impact. Easily available devices; copiers, computers, OCR scanners, modems and laser printers, make it possible for anyone to publish a book if they have the moxie and motivation to pull it together.

There have been so many self-publishing success stories, that the stigma that used to make booksellers and libraries turn up their noses at tomes from other than "real" publishers has vanished. The power to publish brings freedom to thumb your nose at agents or editors or to target niche markets so specialized that they might not appeal to a commercial house. Editors who yawned at your proposal the first time around, may perk up when you return waving respectable sales figures. And, when you publish, you keep the profits. In short, when you have a message, and commercial publishing is not feasible, self-publishing is an alternative to consider.

### Let's Publish!

The story behind Vermont Voices, an anthology of Vermont writing by Vermont writers, covers many points that any book producer must deal with, and is a good example of a successful self-publishing venture. Our modest edition of 1,500 copies first hit Vermont store shelves in October 1991. We had all but sold out less than six months later. We gained significant recognition for the League and some members are talking about a repeat performance!

Voices was a first from the League of Vermont Writers, the state's oldest writers' group, with a membership of about 300. Our organization's profile was near invisibility, and we felt we suffered unfairly from Rodney Daingerfield Syndrome. We knew we had talent in our ranks, but we needed some way to showcase it. Our, "Hey, let's show 'em guys, let's publish a book!" was probably as optimistically goofy as the old flicks where the kids yell, "Let's have a show! We'll turn the barn into a theater..." well, you've seen those movies. If Mickey and Judy decide to have a show in the first reel, you can bet your popcorn that by closing credits they'll be dancing, in fancy costumes to great music. Self-publishing Vermont Voices wasn't quite that simple. It took more work and time than we figured on, and we ran into a few glitches from not knowing exactly what we were doing. Because we published an anthology, we had hassles that most book producers never meet. We often commented how easy it would have been to publish one manuscript, written by one author. A breeze, I'd guess, compared with our submissions in the hundreds, and authors by the dozen. Costs ran higher than original estimates, too. But the book paid for itself, and though there were times when we would have gladly chucked the project, the editors are still on speaking terms. While getting Vermont Voices published, we all learned that book publishers and editors earn their pay.

## Is This Book Necessary?

Having worked in state government, I have written goals and objectives to justify the simplest of projects. I know that we wrote out G&O's for this publishing venture, but the paper must have blown off Karen's desk. Basically our goal was to showcase the best writing by League members, our objective, to get it out where the reading public could see it without losing too much money in the process. With luck, we figured, sales revenues would cover costs. The League is non-profit; we had enough cash to cover reasonable expenses, and we were not locked into regaining what we spent. Even so, the editors felt an obligation not to squander the League's cash or trust, and acted conservatively, testing the ice every step of the way.

We knew that we wanted to sell our book and needed to research the market. Any prospective publisher should check the various "Subject Guide" sections in the hefty Books in Print volumes (libraries and big bookstores always have these) to see what else is out there. You may find your subject well covered, but if the books already available are few, outdated, or highly technical (an easy-to-use guide to a complicated subject might be a candidate for self-publication), you have a green light.

Define the project: write one or two paragraphs telling why your book is needed, what it will cover and who the target audience is. List author credentials. Hand-carry or mail this out and get feedback from book stores, at meetings of related interest groups, from suppliers of gear or supplies related to your subject, from subject specialists. We did two small scale surveys for Voices. Research had shown that there wasn't any book like Vermont Voices already on the market. We identified our potential buyers as the book's contributors, other League members, state residents, and visitors interested in reading about Vermont. Our sales projections were guesses, and proved inaccurate. We assumed that every library in the state would buy a copy, and put a notice in the State Library newsletter offering libraries a low price on pre-publication orders. This netted sales of three copies. We thought schools might buy the book for English classes. Then we blew the entire advertising budget on one ad in Vermont Life, hoping to attract their Vermont oriented subscribers. Sales in these two categories - 1 copy each. But we were correct in guessing that gift, book, and country stores in the state would be prime sales locations. We trotted our info sheets around, and found booksellers both generous with their time and knowledgeable about markets. Most agreed that we had a viable project. Their cautious sales estimates dampened our early plans for a big print run. But they took our flier, read it, asked to be kept posted on progress, and later sold hundreds of books for us. When our designer had color mockups of possible cover designs, we compiled a more detailed information sheet describing the book (by now we had a list of authors' names), and again visited stores --

another chance to stir up interest, while asking sales people to help us choose a cover.

#### What Kind of Book?

We called for manuscripts and for permission to proceed with the book in November 1990, with the understanding that if a majority was not “pro” , we would scrap the project. The response was a resounding “go for it” , and “yes” to use League coffers for funding. Submissions poured in. We asked for writing that conveyed members’ sense of life in the Green Mountain State; its history, climate, folkways, animals, or scenery. Maximum length 1,500 words. Prose, verse, fiction, humor, editorial, anecdote, or reminiscence accepted. We believed that by highlighting the unique qualities of Vermont life, the resulting book was bound to be varied and entertaining, a great marketing tool for the League, as well as a showcase for our writers.

#### The Nitty Gritty

There are many books about self-publishing on the market, and reading at least one is highly recommended, for a better understanding of the endless details a publishing project involves. Write down clear objectives describing why you want to publish. Also, list jobs that will have to be done, who does what, and how long each will take. Be sure you can commit the time.

As early as you can, start application for your ISBN materials (see sidebar on page 88), they take a long time to acquire. Then plunge into the different facets of your project:

- Compiling front matter (title pages, table of contents etc.) and back pages (credits, bibliography, index).
- Format of manuscript, pages and chapters.
- Cover design and color separations.
- Page size, paper choices, and size of print run.
- Spec sheets and price quotes.
- Advertising and distribution plans.
- Oh, and don’t forget storage. We quite overlooked the fact that, stacked in a hall or kitchen, thirty cartons of books makes a substantial pile.

Make a time-line and estimated budget, to be sure you have the cash-flow to get your opus through final printing and out into the waiting world.

Be realistic about what you can do; you probably can’t do it all. If you are skilled at a formatting program - PageMaker, Ventura, ReadySetGo - you’ll find it a snap to set up the book’s contents and laser print camera-ready copy for each page yourself. You’ll save a large chunk of cash that way. However, one trip to a bookstore to see what other paperbacks look like should convince any entrepreneur that money spent on professional cover design is well spent. With luck you’ll find a gifted free-lance designer, as we did. Originally our

designer was to prepare only front and back covers and inside title pages. As it turned out, she designed chapter titles and consulted on text page design as well, greatly adding to the book's professional quality and appearance. We heard over and over how the classy cover and titles, and the uncluttered interior page design, added to our book's appeal. Design cost a fraction of our overall cost, and was well worth it.

+++++++ Continued on next card +++++++

#ENDCARD

#CARD

Chapter 2...

### Pulling Things Together

Volunteer editors, we had a go-ahead for our book caper. Luckily, nobody asked if we had the know-how to pull it off. But then we are all freelance writers, and accustomed to winging it. Karen Lorentz of Shrewsbury, ex-English teacher and League treasurer, had already successfully self-published a book that was selling briskly. Kitty Werner, League president, is a professional computer consultant and programmer in Waitsfield. She scanned submissions not already on disc using "Catchword" and a Logitech OCR Scanner, and formatted text pages in Ventura Publishing on her DOS 38625 clone. Camera-ready copy rolled out of her Apple Laser Writer Plus. Connie Fitz of South Pomfret, League vice-president, an ex-film librarian with re-write and editing experience, had to scramble to learn PR and distribution when she took on those duties. (Connie and Karen both use Macintosh SE's. Connie used a Supramodem 2,400 and "Microphone" to transmit Mac format copy converted to ASCII, via modem up to Kitty's PC in Waitsfield. ) [Another valuable resource for such a multiperson endeavour would be e-mail on CompuServe, Genie, Internet or the like. -Editor]

### Best Laid Plans

We had agreed that Voices would be a "real", commercial quality book, not spiral or plastic bound, would compare in appearance to trade paperbacks in bookstores. We wanted an ISBN, full color cover, and the rich look and feel of comparable literary productions for this book, and we cribbed ideas from books we admired to choose paper color, and weight and type of cover stock. Meanwhile, the manuscript was in the works, and a panel was reading and selecting the text. Why had we assumed that everyone would follow directions? (We asked for discs in either Mac or DOS if possible, and clear, scannable copy if not. To say submissions ranged widely in paper quality, legibility, and formatting, is an understatement.) Manuscripts were read blind, and after weeks of reading, and day-long sessions of discussion and disagreement, we hoped we had our book- one pile of agreed upon "yesses", plus a stack of pieces too interesting to discard

that still needed editing or rewrite. When that was done, using the Chicago Manual of Style as authority, two saintly volunteers copy-edited final versions of every piece for conformity in spelling and punctuation.

#### Budget

All along, a firm budget proved elusive. We couldn't get bids until we knew how many pages we had, which we wouldn't know until each selection was placed. Phone bills and mileage mounted alarmingly as spring turned to summer. We needed to print the price on the cover which was nearing completion, so we hastily assembled preliminary figures, then guessed on a cover price, erring, we hoped, on the high side.

The book began to come together, front and back covers, chapter headings and titles, location of each piece. When every page was numbered, we printed out a dummy, and hole-punched it into loose-leaf format -- at last we could talk to printers. We knew the size of the book, number of pages, weight of cover and page stocks, size of the print run - enough details to compile detailed spec sheets.

Small book jobs like ours are often printed by short-run specialty firms outside Vermont. But going out of state meant higher delivery costs and less control. Also, since ours was a Vermont book, we wanted it to be a Vermont product, and decided to print locally. We carried the dummy to four printers, to ask for final bids. We could have gotten prices by mail, but we wanted a firm that wasn't dismissive of a small project like ours, someone who agreed with us on the project's importance, people we felt comfortable with. Our choice, Northlight Studio Press of Barre, is known for high quality printing; they were not only a low bidder, but were cooperative and friendly to work with. They did a beautiful job.

What a gas when we took our baby to the printer! The designer packed color separations and make-ready for the cover, the double title page, and ornamental chapter titles in protective cardboard. We delivered all that, plus a box crammed with camera-ready copy for every text page, and then sat down with the printers to clear up final details. We had run every page, titles, chapter titles, and text through a copier, and made a manuscript duplicate, pages arranged back to back in actual sequence, for the printer's reference. Though hours had been spent proofreading, we still had to pay for some corrections when we got the blue lines. (a missing comma still drives me nuts.) On the whole, careful pre-planning resulted in no unpleasant surprises, and our books were completed in good time.

#### Marketing and Distribution

For various reasons, none of six regional publishers would distribute for us, and we discovered that the percentage rate charged by newstand distributors would have meant selling below cost. League members saved the day. One agreed to handle all mail-orders, others covered retail outlets in their region. They got one dollar for every

book sold and paid for. We gave them order forms listing our prices and terms - no minimum order, 30 days net billing, no returns, and a modest per-book delivery charge. Retailers got the standard 40% discount whether they bought one copy or a case. We earned valuable air time by donating ten copies to Vermont Public Radio during November fund-raising, and that free publicity just before Christmas sold a lot of books. We gave away dozens of "honoraries" ; media review copies, worthies like the Governor, the state library, the Historical Society, Congressional reps, agents and editors who were friends of the League. Naturally members got their copies at discount, and they bought hundreds. The rest sold in retail outlets across the state, in every major bookstore, Ben & Jerry's in Waterbury, the Craft Center in Windsor, plus countless small cider, health food and stationery shops.

Vermont Voices did the League proud. Self-publishing was worth the effort. It has brought the League and its members favorable notice, made a little money, and showed the world what a go-ahead bunch of writers we have in Vermont.

Connie Fitz is a freelance writer specializing in horticulture and the Vice President of the League of Vermont Writers. Connie writes a weekly column, Touch the Earth, for the Vermont Standard.

The League of Vermont Writers was founded in 1929, meets quarterly, sponsors the annual Dorothy Canfield Fisher Writer's conference, and is open to anyone who writes or aspires to write. For more information write: The League of Vermont Writers, Box 232, Waitsfield, VT 05673

## Resources

Look in Bowker's Subject Guide to Books in Print for a complete listing of books about self-publishing. One that we found helpful was The Self-Publishing Manual: How to Write, Print and Sell Your Own Book by Dan Poynter, ISBN 0-915516-74-8, for \$19.95. Available in bookstores or (it is self-published, naturally) from Para Publishing, POB 4232, Santa Barbara, CA 93140-4232.

You might also want to check the forums about desktop publishing on Genie, CompuServe, America On-Line, and other on-line computer services.

#ENDCARD

#CARD

Chapter 2...

## ISBN Numbers

ISBN stands for International Standard Book Number and is a powerful selling tool for you and your book. On a self-published book it helps cancel the home-made stigma. The ISBN is the center component of automated purchase and inventory systems; many stores and libraries won't touch a book without it because they use it

for ordering and reference. More than any other factor, it declares that yours is a real book. Cost: \$100 for a log book of 100 ISBN numbers. For more information contact:

ISBN Agency

121 Carlton Road

New Providence, NJ 07974

1-800-521-8110 x6770

(908) 665-6770

#ENDCARD

#CARD

Chapter 2...

## Library of Congress Numbers

Like the ISBN, a Library of Congress number helps establish your book and get bookstores to carry it. Contact them early so you will be sure to have your number by the time you go to press. If they accept your book, and they don't take all publications, then they will want a copy when it is published, for inclusion in the Library of Congress. For more information contact:

Cataloging in Publication Division

Library of Congress

Washington, DC 20540

(202) 707-9790

#ENDCARD

#CARD

Chapter 2...

## Bar Code Software

Bar code is the next step beyond ISBN. Many bookstores use bar code readers to take stock and process orders, automating their process and inventory. This saves them money, so... if you have the proper bar code on your book, the book sellers are more likely to want to sell it. You can have the bar code made by a service bureau (the ISBN Agency provides a list of service bureaus), but if you're going to do more than a few, it may pay to invest in bar coding software that can print out on your laser printer or typesetter. The packages that we looked at are PrintBar (Mac) and Labeler (PC) from Bear Rock and MacBarCoda (Mac) from CompuLabel. They all do the job, and will print many different types of bar code including ISBN barcodes. If you are doing a variety of different types of bar code, the PrintBar software may be more convenient since it does all the different bar code types from within one desk accessory. MacBarCoda is set up with a separate desk accessory for each type of bar code. This results in more of your Macintosh desk accessory slots being used up. A



definite negative. On the other hand, the MacBarCoda manual was a bit easier to use for the ISBN bar codes and we were creating our first sample label in just a few minutes. Each company's package offers a lot more than just the simple ISBN bar codes, so if you go with do-it-yourself software, get literature from both of them before you chose your package.

Bear Rock Technologies	CompuLabel, Inc
6069 Enterprise Drive	The Carriage House
Diamond Springs, CA 95619-9394	28 Green Street
1-800-232-7625	Newbury, MA 01951-9985
(916) 622-4775 Fax	1-800-289-0993
\$225 Mac, \$395 PC	\$349 Mac only
Reader Response Number 61	Reader Response Number 62

#ENDCARD

#TAG C2S10P1.pct

#CARD

Chapter 2...

Personal Publishing

Doing It All

by Walter Vose Jeffries of BlackLightning  
new to the Flash Compendium

Self publishing refers to when you create all of the content, illustrations, and layout of a book and finance the actual production of the physical book at a traditional print house. Using computers you can take this one step further and print the book on your laser printer, bind it with the new personal bindery tools, and trim it with a paper cutter. Will you get the same level of quality? No, but, for small projects this is a much more appropriate way to distribute your work.

Why Do It Yourself?

For very small runs, say under five hundred copies, the setup costs at a traditional book printing firm will be very high. For a short book of a couple hundred pages your cost might be six or more dollars per copy. If your retail price on the book is high enough to support this cost and top notch quality is important then this may be the way to go. On the other hand, if cost is a limiting factor, a low initial capital investment is critical, and the book doesn't need to look like it came from a professional print shop, then printing it on demand using your laser printer may be the way to go. Furthermore, if your materials are going to change rapidly and need updating, then by doing it yourself, you can revise or even customize each copy of the book.

Use book-on-demand publishing if you have:

1. Low production levels - Typical of software manuals, memoirs, genealogies & niche market products
  - a. Total production of less than 500 over the life of the book version
  - b. Individual production runs of one to a few dozen
2. Keeping initial cash outlays low is vital
3. Long term per piece costs are not as important
4. You have most or all of the equipment already on hand
5. Custom copies are needed - ie. Personalized children's books
6. It is not critical that the book appear to have been professionally printed
7. Your time is less important than the cost of the project
8. You need a few copies fast

When not to do book-on-demand publishing:

1. Your time costs more than having the book printed traditionally
2. You need more than a few hundred copies fast
3. You will be printing thousands of copies
4. The book absolutely must look professional and be indistinguishable from traditionally books
5. You lack the computers, printers, and other equipment
6. Cost is not a concern - ie. the book will sell for a high enough price to make back many times over the cost of traditional printing

You probably won't get rich doing book-on-demand publishing, but there are applications where it is more appropriate and cost effective than the offset printing on the large presses of a traditional print firm.

### Appropriate Applications

We have been book-on-demand publishing since 1988, and I'm sure many other people were exploiting this technique long before that. We've used it for technical manuals for our production and technical support staff, sales guides for our representatives, informational books for dealers, to archive the results of product research, product documentation, for our annual reports and fundraisers, and to produce the large format version of our newsletter, The Flash. Some other appropriate applications are software and hardware manuals, family genealogies, autobiographies, how-to's, town histories, company reports, and personalized children's books.

Our large format version of The Flash is a perfect example of a book-on-demand project. The Flash newsletter is normally printed at a traditional print company to the tune of 15,000 to 20,000 copies per issue. At fifty pages a copy, this is a totally inappropriate job for book-on-demand. But, some of our readers have requested an 8.5" by 11" version with larger type for easy reading. The demand for the large format copies is low, typically a few dozen per issue at most. The cost to have them printed like the regular issues would be prohibitively high. We received bids of about \$1,700 for 100 copies from the firm that prints The Flash. That comes to \$17 per copy.

Local copy shops came in at a price of about \$6 per copy quantity 100. In both cases, there would be a large initial outlay of cash. Furthermore, if we had 100 printed and only 10 sold, then our cost would increase ten fold to \$170 per copy at the printer and \$60 at the copy shops.

Doing the large format version of The Flash on our laser printers cut our costs, not including our time, to about a dollar a copy. With our labor, electricity, machine amortization, and waste, the cost comes out to be about \$5 per copy. This is equivalent to the copy shop cost, a little bit better quality, and solves the problem of over printing since we can, and prefer, to do it in small runs. When printing them on the laser printer, we've found that doing them one at a time is not worth it. Rather, we do runs of eight to ten copies at a time. Then when those are used up, we do another batch. This significantly decreases the labor costs and gives us a small inventory.

#### Cost Analysis

This technique works and has a lot of excellent applications, but don't expect to grow rich with book-on-demand printing. Your labor will be substantial for each and every copy. Below are estimates of doing 10, 100, 1000, and 10,000 copies per printing run in the traditional manner, at a copy shop, and book-on-demand. Note that these numbers are per print run. You might reprint and do many more copies over the life of a book than a single run.

#ENDCARD

#TAG C2S10P2.pct

#CARD

Chapter 2...

Each solution has a range where it is most appropriate. In very low production runs you probably won't even include your own labor or machine costs in the equation so the book-on-demand becomes the best choice by far. In fact, it is probably appropriate for print runs of up to a hundred copies. From 100 to 1,000 copies, you would be better off to print one copy on your laser printer and take it to a good quality photocopier and have it reproduced. For runs over 1,000 copies, traditional printing becomes the method of choice. This break-even analysis is heavily influenced by the high fixed costs of traditional printing which includes a fair bit of prep work, making printing plates, and creating a blueline proof. This makes traditional publishing inappropriate for a very small run but, when you get into larger numbers of copies, the economies of scale and the speed of the bigger offset presses makes it the best method.

#### How To

How you go about printing your book is going to depend largely on the hardware and software you have and what you are familiar with. While fancy, high speed, high resolution PostScript printers are nice to have, they cost a lot more than many of the cheaper, slower

personal laser printers and are not necessary. Lets take a look at the equipment techniques we use with the foreknowledge that there are both less and more expensive solutions.

We use Macintosh computers for all of our editing and layout. You can now get excellent software on the PC for this same task, but when we started, the Mac was by far the best, and it still leads. For editing, almost any computer will do. For doing layout, a Mac Plus screen is adequate, but our larger Mac II style screens give a lot more space to see more of the document at once. Ideally, you would use a two page monitor so you can see a complete spread at once. Some people emphasize doing all of your layout directly in PostScript. This is possible, but we find it much more efficient to use one of the more powerful page layout programs like Ready,Set,Go! from Manhattan Graphics. Layout programs automatically take care of a tremendous number of details such as page numbering, gutters, odd/even page printing, master pages, and let you see on the screen what your printed output will look like. This last aspect is very important in keeping the quality high and your layout time short. A big improvement over writing everything in raw PostScript. If you're doing this, you have a computer. Let it do the mundane stuff like writing the PostScript code. Then you can focus on the creative aspects of content, layout, and design.

Before you start your first layout, take a look at some other books. study their layout. What works? What doesn't? Look at gutters (the space between the text and the binding), white space, margins, and type. How do they handle page numbers, titles, headers, table of contents, and the index? A little time spend studying other people's work will help keep you from having to reinvent the wheel and give you a lot of design tips.

If your book is technical in nature, a good index is a must. Doing one by hand is possible, but can be infuriating to you and your readers. We found Sonar Bookends from Virginia Systems to be an excellent program on the Macintosh. It works with most of the common word processors and the major page layout programs. With Sonar you just supply a list of words and it will generate an index for you. Sonar works very fast; our test document was 100 pages in two RSG files. Sonar took about three minutes the first time and only about thirty seconds to regenerate the index. The list you give Sonar can have multiple levels, can substitute a word or phrase in the index and can even use wild cards and boolean expressions. If you have a Mac, get it. If you have a PC, get something like it, or get a Mac. An indexing program will save your time, money and sanity, and make you book much more professional and reader friendly.

While any laser printer can do the job, our fast Xante upgraded PostScript LaserWriter Plus makes it much easier. The PostScript lets us do the high quality text and illustrations you find in The Flash using programs like Adobe Illustrator and PhotoShop. The speed of the Xante upgrade makes a big difference when doing layout because

we print a lot of proofs. On a plain vanilla LaserWriter Plus, some of the pages may take as long as half an hour to build. With the Xante board this time is reduced to two or three minutes at most for even very complex pages. Most pages build and print in eight to fifteen seconds. The time saved makes the whole process of laying out each issue go much more quickly.

Lastly, the Xante board raises the resolution of the printer from 300dpi (dots per inch) to 600dpi for text and 850dpi for greys. This greatly improves the quality of the final product and makes it much closer to traditional print quality.

Our printer, a series I model based on the Canon CX laser printer engine, uses a curved paper path which results in a few more paper jams than the newer series II & III SX print engines. Avoid the Personal printers based on the Canon LX print engines because they have a very contorted paper path and handle double sided printing poorly.

Some other things we would like to add to our laser printer would be duplex printing, multiple simultaneous input paper trays, and larger paper sizes. Currently, we have to feed the paper back in (via the paper tray) to print the second side. With a duplex adapter we would be able to print both sides without messing with the paper between passes. That would save time and labor, reducing our printing costs still further.

#ENDCARD

#TAG

#CARD

Chapter 2...

Multiple simultaneous input paper trays are less important but would be a nice feature for being able to have more paper in the printer at once so it doesn't run out so often, and being able to have a selection of different paper types automatically selected. (See TowerFeed page 51)

If we could print 11" x 17" paper we would have a lot more flexibility in our projects. Currently, all of our printers only print 8.5" x 11" and 8.5" x 14", the standard size. The prices on the larger printers are coming down but they will always be more expensive due to the limited demand for that format.

Once you have your pages printed you need to bind and trim them. Ideally you would bind first, and then trim the edges to get a professional look. That requires a very heavy duty paper cutter to slice through more than a dozen pages at a time. Ideally we would want to be able to cut 50 to 200 pages in a slice. Since paper cutters that can handle that are so expensive, we do our trimming first and then bind the pages together. This lets us use a small, inexpensive paper cutter to trim 10 pages at a time. The trick here is to be very careful to always make the same size slices or the edges of the book will look very ragged. Even with great care, it never looks quite as

good as if all the pages had been cut at once.

For binding we used to use a saddle stapler for some small projects. This type of stapler lets you put the staples deep into the crease of a folded sheet just the way The Flash is bound. For bigger projects like the larger format Flash, we prefer perfect binding. That is the type of binding found in most paperback books. In addition to looking more professional, it lets the pages lie flat and gives you a flat binding that you can put a title onto. We have found that the systems from Ibico and Avery both work very well. (See Perfectly Binding) With either of these systems you might be able to further reduce your costs by making your own covers and using an appropriate hot-melt glue.

Some extras you might consider are:

- Use laser color on the cover to do "gold leaf" embossing
- Have color photos copied on a color copier and print the text on them
- Have the covers custom printed in color by a print shop and then use them as you need them.
- Personalize each copy with a dedication or other information
- Print custom versions which select different chapters based on a persons interests rather than having everything in one book.
- Laminate your covers at a local copy shop or do it yourself.

Laser printers and computers have brought the power of book publishing onto a personal level. Very short runs are now practical. This is a powerful advance in publishing, to be compared with the invention of the printing press and we'll undoubtedly see more changes in the coming decade.

In a future issue we will look at pre-press issues and what to do if you're going to go the other route, and take your book, newsletter, or brochure to a professional print shop.

#### Sources

Be sure to tell them you read about it in the Flash Compendium.

Use the Reader Response Card to easily get more information.

Adobe Illustrator [Mac & PC]

Adobe Systems

1585 Charleston Road

POB 7900

Mountain View, CA 94039-7900

(415) 961-0911

Reader Response Number 42

Sonar Bookends [Macintosh Indexing]

Virginia Systems

5509 West Bay Court

Midlothian, VA 23112

(804) 739-3200

Reader Responds Number 43

ReadySetGo [Macintosh Layout]

Manhattan Graphics

250 E Hartsdale Ave

Hartsdale, NY 10530-9861

1-800-572-6533

Reader Response Number 44

Accel-a-Writer [PC or Macintosh]

Xante Corp.

2559 Emogene Street

Mobile, AL 36606

1-800-926-8839 or (205) 476-8189

(205) 476-9421 FAX

Reader Response Number 27

1st Impression [Perfect Binder]

Avery/Dennison

321 Fortune Blvd

Milford, MA 01757

1-800-677-5150

1-800-424-7742 FAX

Reader Response Number 45

DuraBind [Perfect Binder]

Ibico

760 Bonnie Lane

Elk Grove, IL 60007

1-800-323-5373 1-800-448-5268 FAX

Reader Response Number 46

TowerFeed [Mac & PC Extra Paper Draws]

DynaBit USA, Inc.

324 S. Hyde Park Ave. Suite 200

Tampa, FL 33606

1-800-676-3962

Reader Response Number 47

To use the Reader Response Numbers (RR#) circle the RR# on the enclosed Reader Response Card and mail it to The Flash, Riddle Pond Road, West Topsham, VT 05086 or fax it to us at (802) 439-6463.

## Registration

When creating layouts for use with color print toners or transfer toner, good registration in multi-color designs is often critical. There are a number of techniques for improving registration. Outlining

between colors and over lapping on both sides a little, helps define a design and mask slight registration discrepancies. When loading the paper tray for each successive pass, fan the stack of papers and place in the tray. Tap the tray until the pages rest evenly against the front edge. Be careful not to overheat the machine, for that will cause the registration area to change... Keeping your machine's rollers and pickup claws clean will help keep the paper on its path the registration in-line. Prepressing the paper to remove moisture by passing it through the printer while printing a blank page once is also good.

#ENDCARD

#TAG C2S11P1.pct

#CARD

Chapter 2...

The Eyes Have It

by Jonathan Dailey of Creative Designs

New in the Flash Compendium@ Eyes Text

How do you capture the attention of your reading audience and keep it when you are creating a newsletter, report, article, or other written matter? Use clip art and illustrations. Visual clip art communicates ideas faster and more effectively, pulls the reader into the presentation and makes the page more eye appealing. Statistics show clip art increases comprehension and retention by as much as 500 percent!

One Picture is Worth a Thousand Words

That old saying about a picture and 1,000 words is still very much true. We learn through every one of our senses, each to a varying degree. Taste accounts for only one percent, and touch only one-and-one half percent. Smell is three and one-half percent, and hearing is a surprisingly low eleven percent. The remaining eighty-three percent of the data we gather comes to us through our eyes! Learning is largely a visual phenomenon.

[Picture 1]

#ENDCARD

#TAG C2S11P2.pct

#CARD

Chapter 2...

Sometimes a visual can vividly depict a fairly complex idea so well that it eliminates hundreds of words needed to explain the same concept. When your audience is visually stimulated in what you have written, retention rates can soar to 90 percent or more. Terry C. Smith, a communications manager at Westinghouse, outlined some of the advantages of using visuals in his book *How to Write Better and Faster*:



[Picture 2]  
#ENDCARD  
#TAG C2S11P3.pct  
#CARD  
Chapter 2...

“People believe in illustrations. A diagram of a proposed organization is more ‘believable’ than a word description. When presented in graphic form, rough estimates seem more precise than they really are. An artist’s concept of a revolutionary new piece of equipment makes its development seem just over the horizon. And, of course, nothing beats an actual photograph for adding authenticity.”

The use of graphics adds white space on the page while focusing attention on a specific portion of the text. These visuals don't have to be fancy, but they have to be seen to be effective. That’s where a clip art library of many catagories come in extremely handy. Visuals added to your writing make you look more professional.

Face it, we live in a visual world. Without visuals to stimulate the reader, there’s something missing from a newsletter or other presentation.

Before Using Grapics, ask yourself:

1. What graphic would best enhance an idea that is explained in text.
2. Where in the text can a piece of clip art be placed to add more white space for easier reading.

[Picture 3]  
#ENDCARD  
#TAG  
#CARD  
Chapter 2...

Having a large clip art library covering a broad range of subjects will greatly assist in publishing more professional and more interesting documents.

### Selecting Your Clip Art

The best and easiest form of clip art today is EPS (Encapsulated PostScript) which can be resized and shaped in most word processing and page layout programs with no loss of quality. EPS art can also be modified, reversed and colorized in programs like Illustrator, Freehand and CorelDraw.

More traditional clip art is available in specialized books which the user cuts out and pastes into the document with glue or tape. The advantage of computerized clip art is that it features a pictorial index so that each file can be used independently or combined with other files to create a custom graphic relating to specific texts.

Jonathan Dailey founded and runs the Clip Art Network. Looking for unique clip art or interested in having your clip art published? Contact him at Clip Art Network, 11024 Montgomery NE #311, Albuquerque, NM 87111, 1-800-869-8520. Or circle number 50 on the Reader Response Card.

[Flashbulb]

Network Slowdown with Accelerator

If you are using a Xante Accel-A-Writer, you may find it hanging on startup. This can cause problems for the computers connected to its network. We have noticed speed loss and crashes when the printer hangs up. The only solution we have found is to shut the printer off and try again.

#ENDCARD

#TAG C2S12P1.pct

#CARD

Chapter 2...

Going To Press

Part I: Why, How, & Quotes

By Walter Jeffries

In past issues we have looked at publishing your own newsletter, self publishing a book, and book-on-demand printing. With this issue we begin a three part series about moving from printing small runs on your laser printer to printing larger runs on offset printing equipment at a printing house. First we will look at why you might want to move to offset printing, when it is most appropriate, what equipment the printer uses, how to get a quote, and what advantages and limitations offset printing imposes on you, the desktop publisher. Laser printers and desktop publishing are great; they allow us to do things we never would have done before: improve the quality of our product literature and printed matter, gain control over how it looks, and keep our costs down. But, laser printers are not the end all and be all of printing. Desktop laser printers work best for small jobs and short runs. Most laser printers don't handle sheets larger than legal size (8.5"x14"), can't print bleeds (all the way to the edge of the paper), are severely limited in color choice, and are very expensive for runs of more than a few hundred, never mind thousands or tens of thousands, of pages per job.

Advantages of offset printing:

- Bright colors

- Multiple colors

- Improved quality

- Professional looking covers

- Saving money on large runs
- More flexibility with paper sizes
- More flexibility in paper finishes
- Special folding or binding
- Mailing services
- Time savings

Laser printers are best for letter or legal size, one color, one sided documents with no bleed. You can print double sided, but with many laser printers this creates more jams and hassles than single sided printing. You can add color using LaserColor, color toners from BlackLightning, or special pre-printed colored papers from companies like Paper Direct. But, it doesn't look as nice or as professional as an offset printed piece, and the selection of colors for standard laser printers is severely limited. Dark colors, blues, browns, burgundy, green, and black are available, but for now forget bright colors like yellow, orange, light green, and fire engine red. Larger tabloid size laser printers are becoming available, but face the above limitations, in addition to being expensive.

If you want to print a large run, use color, or work with larger paper sizes you need to turn to traditional sources of printing, such as your local print shop. Professional printers come in several types:

- Quick Print Shops with copiers or small presses that can be very economical for short runs of envelopes, fliers, and other, simpler pieces;
- Large Print Houses that have big offset presses to handle wider sheets of paper and thus gang the print job, keeping the costs down on larger runs;
- Specialty Printers who focus in on just books, magazines, or some other narrow market in the printing industry.

Each of these has something to offer and you should use the printer who can best handle your job. While a quick print shop may be perfect for a short run of envelopes or letterhead, it may be inefficient and costly for them to print a larger catalog or book. A larger print house might be ideal for handling catalogs, larger runs of envelopes, glossy sell sheets, newsletters, and pamphlets; but lacking certain specialized equipment, they may not be ideal for larger book or magazine runs. The bottom line is find out what your local printers do best.

Let's look at an example job and compare costs. The actual costs will vary with your location and the equipment your printer has.

Printing a run of 100 double sided single color newsletters on an 8.5"x11" page on your laser printer is cheap, efficient, and you'll have a rapid turn around time. Typical cost is about 6.5¢ per page including good quality paper, toner, machine depreciation (wear & tear), and electricity. If you add in your labor at \$10 per hour then it comes out to about 12¢ per page. For short runs that makes sense, but if you start printing more than a hundred copies it may be

cheaper to take it to a copy shop, especially if your time is valuable. (Printing 10,000 copies on your laser printer would take about 30 hours!)

Photocopies use basically the same technology as a laser printer uses and run about 8¢ per page in runs of a hundred or more. The advantage is big copiers run much faster and can save you time and wear & tear on your printer.

Using offset printing at a quick copy shop with a small press, the cost per copy might run about 27¢ for 100, 8¢ for 1,000, 5¢ for 10,000. At a larger print shop, with bigger presses, the cost per copy might run about 78¢ for a job of 100, 11¢ for 1,000 and 3¢ for a job of 10,000. Obviously, for short runs, the laser printer is preferable, but for longer runs, offset printing quickly becomes cheaper, especially when you include your own labor costs.

So, you've decided your project needs to move off the desktop from your laser printer to offset presses. What is the process? How does offset printing work? If you understand the basics of the printing process you will be better prepared when you go to the printer.

#ENDCARD

#TAG C2S12P2.pct

#CARD

Chapter 2...

A typical print job starts with paste-up. The pages are placed on a copy board for the camera to shoot. The resulting negatives are used to print onto a special light sensitive paper to produce blue-line proofs. The customer checks the proofs, making any changes or corrections, and signs off if they look okay. If there are major changes then the first few steps are repeated to produce another set of blue-lines. The final negatives are then used to expose metal plates coated with a light sensitive material. Where the light has exposed the coating (clear areas on the negative, dark areas on the original image), it hardens. Any areas of coating not exposed to the light are soft and are washed away exposing the metal. An acid is used to etch the plates where the coating was not hardened creating a relief image. This process is very much like the process used to create printed circuit boards and some trophy plaques.

Next, the etched printing plates are mounted on the press. Ink is applied to the plates, and the raised areas of the plates (the dark areas of print on the originals) press the ink onto the paper to produce the printed image. To produce multiple colors, separate plates are used for each spot color or for each of the four colors in process printing. The paper is sent back through the press for each of the color plates. Some high end printing presses can do both sides of the page at once, and even do multiple colors, one after the other, without the paper ever leaving the press. After printing, the ink must dry to prevent smearing during handling, folding, and binding. Single page jobs are then trimmed and folded as necessary. Pages

with bleeds or color must print beyond the trim lines, wasting a little paper and increasing the costs since not as many pages can be gotten from each sheet of paper. Multi-page jobs, like pamphlets, books, newsletters, and magazines, are folded into signatures, bound and trimmed. Binding typically consists of saddle stitching (really with staples, but it used to be done with string, thus the term), gluing (perfect bound, like a paperback), or some type of spiral binding. Book covers are often laminated with film or liquid lamination to give a protective finish. A less expensive protective finish can be given with varnish, which can also be used to produce some interesting, subtle textures on cover stock. Lamination does the best job of protecting the cover from ultraviolet fading, finger prints, stains, and scratching.

When you're planning printed products, the ganging, or number-up (N-up), that can be done on a printing sheet is a very important factor in the cost of the project. If the printer can print two pages at a time, the job goes faster and the the printer saves expensive press time. This comes back to you in the form of a lower price. The more pages that can fit on the sheet, the greater the savings. When you have a bleed, a little bit of paper around each page must be trimmed off and discarded resulting in waste, decreasing the number-up and increasing the price of the job. Smaller Quick Print shops have smaller presses and so they can't gang as many images on a sheet resulting in higher costs for longer runs due to labor and press time costs for more complex jobs such as many page books or multi-page newsletters. Big print houses typically have larger printing presses and can give you a greater savings on larger print runs. When you give the printer the job specs, including the final page size, they can tell you what size sheet they will use for different jobs and thus the N-up. For example, The Flash is printed on sheets which yield 8 Flash pages to a side for a total of 16 pages to a signature. A 32 page Flash and a 28 page Flash will cost us the same to print. Therefore, we plan to have the number of Flash pages be some multiple of 16 to get the most for our money. For this issue, the set of outer Flash pages is a heavier stock of paper to increase it's durability. These four pages were done on a separate signature. That is why there are four additional pages plus the mailer cover, which was also done on it's own signature. Four signatures plus the two outer covers, the center insert and the extra mailing cover make a complete copy of The Flash.

Paper comes in a tremendous variety and the paper is as important as what is on it in making your presentation professional. The right paper surface, weight, color, texture, and opacity can make the difference between a cheap handout and a professional quality presentation. You wouldn't use the thin, cheap pink paper or a carbonless receipt for the cover of an important company report or product sell sheet. Nor would you waste expensive coated glossy paper on an interoffice memo. Selecting the proper paper for the job

is a place where your printer can be a big help. There is a tremendous variety of papers available and your printer is likely to know about them. Describe what you are trying to do, how important cost is, if the piece is going to be a self mailer (ie. a brochure or postcard), what feel you're aiming for, and anything else you can to convey your project's essence. The printer will be able to provide you with samples of papers that will match your needs.

For larger projects like books and multi-page newsletters, most printers will even provide you with a dummy. A dummy is a blank version of the project: paper, bounding, and trimming to final size. This gives you a chance to feel in your hands what the finished product will be like. You can weigh it to check what the postage will cost, and sketch in what will fall on each page. A dummy can be a very important planning tool in complex projects and is well worth getting. Do not confuse pages with sheets. Sheets are the pieces of paper. Pages are numberd.

There are several basic types of paper used by printers. Papers are described as having a weight, measured in pounds, and some papers also are described in points (thickness or bulkiness). Paper weight can be very confusing because not all papers are measured in the same way. It is best to supply the printer with a sample or description of what you would like and they can then match it.

Coated Stock can come in a glossy or matte finish on one or both sides. Coated stock is better at showing off halftones and very fine details. The coating makes the paper less absorbant which reduces the spread of the ink and results in crisper images. This is why coated stock is used in high quality magazines and art books. This finish is typically achieved by using a coating of non-absorbant clay on the surface of the paper.

Recently the print industry has been experimenting with using other materials for the coating to improve the drying times and reduce the chemical reaction that sometimes happens between certain inks and the coating. This is not something you need to worry about as your printer will handle that aspect. Basically, use coated paper when you're doing photographs or four color work that needs to look as sharp as possible. Sell sheets, high quality magazines, and slick brochures are good examples of types of projects where glossy stock is appropriate.

Offset Paper is the paper normally used in books, magazines, and such. The Flash is printed on a variety of offset papers.

Bond Paper is normally used for fancy letterhead and typically has a watermark indicating the maker or user.

Cover Stock is used for covers, business cards, postcards, and any other place where you need extra stiffness.

Index is used for very heavy weight posters, rolodex cards, manila folders, and index cards. This is a heavier, less expensive paper which lacks nice finishes.

There are a variety of other specialty papers like carbonless NCR

paper which your printer may be able to supply.

Recycled papers are available, although paper containing recycled materials is generally not as strong as virgin paper. Due to the high demand, recycled papers are becoming more wide spread so the quality is improving and the prices are dropping as it becomes less of a specialty item. Still, expect to pay a little extra for recycled papers. The equivalent grade of recycled paper runs approximately 15% more expensive than virgin paper.

As an example of a variety of papers, The Flash newsletter you have in your hands consists of an outer mailing four color cover of 7.5 pt Springhill, an inner cover page of 60 lb Offset Opaque, inner text pages of 40 lb Offset Opaque, the bound in postcards are 7.5 pt Springhill, and the full color center fold is 80 lb coated two sided Warrenflo.

After paper, ink is the most important part of the job. Almost every color of ink is available and most printers can make a close match of ink for spot printing. Be aware that inks will look different on different paper types and paper colors. Once you start adding ink colors you'll find that there are two color printing techniques: spot color and process color. Spot color refers to using a particular color of ink to lay down areas of color such as a red hollyberry, a green leaf, or a headline. Process color is the technique of mixing the basic color set. We'll be looking at this in more detail in a future article.

One of the issues with inks is having an environmentally friendly ink. In the past inks were made with lead and other poisonous elements to give them vibrant colors. In recent decades it was realized just how toxic these elements were and the printing industry has been working hard to substitute more environmentally friendly materials such as soy. Even if an ink is soy based it still is not 100% biodegradable because it still has some of the petrochemicals in it that other inks have. Plus, the ink still gets mixed in with solvents in the press, adding toxic materials to the paper. Excessive amounts of soy in the ink can cause a bit of a drying problem on some papers. This will probably improve in the next year or two as production improves. The end result is, ask your printer for a recommendation and follow their lead.

#### Getting A Quote

Once you have decided you want to go with offset printing, the next step is to get a quote. It is important to provide as much information, as clearly as possible, when asking for a quote. This way the printer has a good idea of what your needs are and can accurately price the job and make recommendations on paper, ink, and other aspects. The printer should provide the quote to you in writing, usually with an expiration date (ie. good for the next 30 days). Keeping everything in writing leads to clear communications and fewer errors. This also helps you think clearly about your project. Of course, don't hesitate to call to speak with the printer and ask for clarification on any things that are confusing.

Below is a checklist of information to provide to your printer when asking for a quote:

Project Name - for clear communications

Contact - person and phone number in your organization for quotes and questions

Format - size, number of pages (not sheets), etc.

Preparation - Will you be providing camera ready artwork or will you need photos and screens dropped in, paste-up work, bleeds, etc.

Ink - how many sides will have ink (one (1/0) or both (1/1)) and the number of colors of ink. ie. "4/1 Process/Black Soy Ink" means the first side is full color (four process colors) and the second side is black ink. If you can, specify PMS colors for spot color inks or provide samples on similar paper for the printer to match.

Paper - specify exact weights and types or enclose samples for the printer to match.

Finishing - folding, perforations, and binding ie. saddle stitch (like The Flash), perfect bound (like a paperback book), spiral bound, etc.

Notes - any special comments like extra inserts to be included or placements to be noted.

Mockup - for complex projects you should definitely provide one.

Quantity - Ask where the quantity breaks are as some times it makes sense to print extras if you'll use them in the long run.

Mechanical Date - When the artwork will be delivered. Allow for last minute delays

Proofs - What you would like to see as proofs. ie. blue-lines, color keys, etc.

Completion Date - When you expect the job done and delivered to you.

Delivery - How you want it delivered (ie. UPS, Customer Pickup, etc)

Variations - Often it is good to know how much a similar job with a minor change would cost. ie. changes in quantity, paper weight, etc.

It may take a week or two for the printer to get back to you with quotes, so do this step as early in your project as possible in case you have to make changes based on the printer's quote. For large jobs, get quotes from several printers, being sure that you are comparing apples to apples. Also talk with friends and business associates to see which printers they use for different jobs.

Next time we'll look at setting up your artwork so it is camera ready and delivering it to the printer. After that we'll cover the basics of using color. By gaining this basic understanding of the offset printing process, thinking through your project carefully and maintaining good open lines of communication with your printer, your printing job will be off to a good start.

## Proofs

Blue-lines are printed from the negatives shot by the camera on a photographic paper. The actual final product will not be quite as good because the plate making step adds one more generation to the



process. But, blue-lines are close, and they give you a final chance to proof the work before it goes to press.

Match print is what a color separator typically provided along with the color separation negatives. The problem with match proofs is the color may be off on the proof, since the actually printing inks are not used and it is on a high gloss material. On the actual paper it may look different. Keep this in mind. If you're dealing with someone who knows what they are doing they will see it as it should be.

Color keys are color proofs that consist of layers of clear mylar, each of which has a color on it. When stacked, they show the complete picture and are very close to the final printed colors.

#ENDCARD

#TAG

#CARD

Chapter 2...

### Signature Sideline

Understanding how signatures work and how to put together a dummy is very handy and even essential if you are going to get the most for your money on complex projects, especially if you are using any additional colors. For simple projects of only a page or two, it's no big deal. However, when you get into multi-page, and multi-signature projects, knowing how the pages lay out on the press can save you time and money, and let you do more creative layouts. Check the folding with your printer, as different printers may use different folding schemes.

Lets fold up a signature and make a thumbnail dummy for an imaginary 16 page project. Assume we have already contacted the printer about how they gang the pages on the press sheets and found the following:

The arrows indicate which direction is up for each of the pages. The large bold numbers represent the page numbers on the first side of the signature. Small light numbers are the page numbers on the opposite side of the signature. As you can see pages 8 and 9 are next to each other both facing the same way. This is the center of the booklet where you could easily run across the gutter, the space between the pages, with a large graphic. Pages 1, 4, 5, 8, 9, 12, 13, and 16 are all on the same side so we could have a second color printed on that side and get color on those pages. It typically costs more to have color also printed on the other side of the signature so you can save money using one side.

At right is the folding sequence the signature goes through after printing and drying. Then it is trimmed and stiched to produce the final booklet with all of the pages automatically in the right places. To make a larger book, larger signatures are used, or more of them are bound together. Over 100 pages, and you would switch from stitching to another type of binding such as perfect bound or spiral

bound.

By folding a sheet of 8.5"x11" paper, you can make your self a miniature of the booklet. This is called a thumbnail (miniature) dummy. Then you'll be able to mark up the dummy where pages, graphics, articles, and other layout materials go. You'll find this very helpful in creating complex projects. It would be very nice if page layout programs would print the dummies so you could fold them up. Ask software publishers and maybe we'll see this feature in the future.

## Compendiumania!

### Notes from a Journal

Stardate 6/26/92 wvj - Wow! What an experience. We just finished self publishing the Flash Compendium 1992, a book of all The Flash back issues. Laying out 256 pages plus a two color cover was a lot different than doing our quarterly 50 page newsletter. It is done and off to the printer, we've slept for a few days, and are alive and thinking straight again.

Some tidbits we learned along the way:

1. Have reprint permission contracts with any outside writers well in advance. We didn't with one writer we wanted to include in the book who had submitted material and been paid. He changed his mind the day we were supposed to go to press. We had to write new articles that weekend and redo the layout. Lesson learned.
2. Talk to your printer from early on. We did, and it saved us a lot of hassles. Know all the things they will need and get a complete break down on the costs, so you know how much it costs to increase the page count and where the efficient breaks (signatures) are.
3. Have the cover film laminated. It costs a bit more but it makes a big difference in quality.
4. Do your cover last. We did it near the middle and later got new ideas and redesigned it after laying everything out and it came out much better.
5. Book-on-Demand complete mockups for final proofing. We caught a lot of mistakes this way that we would not otherwise have caught. When it is all put together just like the final book will be, it gives you a new perspective. Give a copy of this mockup to the printer when you take them all the artwork. It will help them make sure they get it all put together correctly.
6. Use an indexing program to spell check your book. We used Sonar Bookends on the Mac. It was not our intent to use it for spell checking but it caught a number of typos including '0f' (zero f) for 'of' that we otherwise had missed.
7. Get as many friends as possible to proof read. We did and it makes a big difference. Two great proof readers will each find different mistakes.
8. Allow twice as much time as you think you need. We missed our first deadline but had left some leeway and made our next one a

week later. We would have been even happier with another week to quadruple check everything.

9. Do final proofing of final mechanicals as they print. You'll still find errors...

10. Get some sleep. :-)

It was a lot of fun and quite a grind. We'd do it again, but allow more time. We've now reread my mockup copy four more times without finding more (significant) mistakes so we're happy. It feels great! Can't wait to see it.

### Colorful Merges

Create very personalized distinctive mail merges by doing the body of the letter in one color (green is my favorite for this) and printing the letterhead and signature together in another color pass. This way the job runs at the maximum rated speed of the printer during the printing of the letterhead and signature. Double page processing on our Xante Accel-A-Writer makes this even faster on the merge part. If you're doing a huge number, be careful of build up on the fuser wand felt, running out of toner, and overflow of the waste reservoir. Check the fuser felt every few hundred copies and change it as necessary and rock the cartridge to redistribute the toner every thousand copies or so.

### Less Time Than You Think

If you have stopped smoking and think you have to wait years to realize the health benefits, consider the fact that within 72 hours your lung capacity is already increasing. A long term incentive is that within 3 to 5 years, your risk of a heart attack drops to that of a non smoker. Give your lungs a break...

#ENDCARD

#CARD

Chapter 2...

### Self-Marketing

#### Selling Your Book

By Patricia Gallagher

As a writer and publishing consultant, many people ask me questions about self-publishing. The following is a hands-on resource guide addressing frequent concerns and issues that are raised in the seminars I offer.

#### Who should self-publish?

Someone with lots of time, energy and enthusiasm is the answer that pops into my mind immediately. Writing the book, believe it or not, is the easiest part; but the real work begins when you begin to design, produce, market, and publicize the book. For most self-publishers, a great deal of resources are spent in moving the books from the storage area to the people who want to buy the book.

What is most important in self-publishing?

If you are going to publish yourself, do your best to make your book look like the ones found on the shelves in a bookstore. Don't let it appear home-made. Spiral bindings may be okay for a book that you are going to sell in a seminar, but if you want "respect," follow the example of the major publishers in regard to size of book, paper, cover design, bar code, ISBN, laminated cover, name of book and author on the spine. See what competing books look like and follow their pattern for success.

You must include a coupon so that people can order directly from you. Look at other books and see how they have designed an order form. I sold about 1,000 books to libraries in 1987. Now, years later, I still get requests for that book from people who saw it in the library and decided that they wanted their own copy. It helps to say "satisfaction guaranteed" when selling by mail. I put an order coupon in the front and in the back of my books.

What do I do to make my book professional?

You should have an International Standard Book Number (ISBN).

Take a look at books in the bookstore and library; note that most have an ISBN on the back cover and also on one of the first few pages of the book. Book stores, wholesalers, libraries, etc. identify your book through the ISBN. Contact R.R. Bowker, ISBN Agency, 121 Chanlon Road, New Providence, NJ 07974, 1-800-521-8110 or (908) 665-6770, and ask them to send you an application. The fee for a list of numbers is currently \$100. Hold on to the computerized list and use the assigned numbers to identify each of your books. You would assign one number to the softcover edition, a different number to the hardcover edition, a third number to the second edition of the same book if you change it significantly.

This number is important so that prospective customers can find your book. If they go to the library, the librarian can find your title in one of her reference books and can give people the address to contact you about ordering the book.

You will want to have the ISBN bar code printed on the back cover of your book. You can contact a company such as GGX Associates, 11 Middle Neck Road, Great Neck, NY 11021, (516) 487-6370, who will take your ISBN and convert it into a symbol (film master) which your printer will print when the covers are made. By contacting the above company, you can receive a booklet that explains the coding guidelines for the book publishing industry. This company currently charges \$20 for the bar code. There are many companies that provide this service. When you contact such a firm, ask for help in selecting the correct code and symbol, advice on color and location, and ask about their turn-around time.

If you want to sell to libraries, you should have a Library of Congress Catalog Number (LCCN). Request a form for Preassignment Of Library Of Congress Catalog Number by writing to Cataloging in Publication Division, Library of Congress, Washington, DC 20540. They will send

you an explanation of this service. At the same time, call (202) 707-6372 and ask for their Cataloging in Publication: Information for Participating Publishers.

How do I obtain a copyright for my book?

To obtain a copyright for your book, contact the Office of the Copyright, Information and Publication Section, Library of Congress, Washington, DC 20559, (202) 707-9100 or (202) 479-0700, and request a TX form for each book you plan to publish. Simply fill out the form and send the current fee (about \$20) with two "best editions" of your book to the address listed on the TX form. You may call the above hotline number and ask any questions that you may have about registering a copyright. Also request that they send you any booklets or brochures that explain the meaning of copyright. You will notice that most books have a copyright in the front of the book along with some words to the effect of "Copyright, 1991, by Patricia Gallagher. All rights reserved..." You won't have a copyright without this notice.

Do favorable quotes help sell books?

People seem to read the cover before they read the table of contents when browsing in a bookstore. If you know any celebrities or experts who might say a few sentences about the merits of your book, it wouldn't hurt to ask them for a comment. Be sure to obtain their written permission to use their quotes. One fellow author sent his book to a well known radio personality who sent high praises for the book in a letter. The author used the celebrity's comments on an advertising piece and found himself in a heap of legal trouble to say nothing of dealing with an irate voice on the other end of the phone. The radio personality said it was a personal letter and the author had no business using it for promotion.

In what directories, listings and reference books in the library should I be referenced?

If you are going to self-publish a book, you want to make it easy for people to find your company or your book. One of the ways is to get your book title listed in the Books In Print series, which is published by R.R. Bowker. To start the ball rolling write to the Advance Book Information Office, ISBN Agency, R.R. Bowker, 121 Chanlon Rd, New Providence, NJ 07974, or call 1-800-521-8110, and request five copies of the Advance Book Information form. Ask for any additional brochures that describe their services. (There is no charge for the forms). When you received the ABI form fill it out completely and return your book information to their office. They will take your book information and use it to list your book in their series: Books in Print, Subject Guide to Books In Print, Forthcoming Books, paperbound Books in Print and several other reference books. You might want to visit a library and take a look at these books so you can visualize them.

There are many times when people are looking for books about starting a child care program but don't know what is available. When

they check the Books in Print series, my name as the author and my book titles are listed along with my address and the price of the book. During the past years, I have had a steady stream of orders from people who located my company through these directories. You should contact the ABI office much in advance of the publication date so they can list your book in Forthcoming Books.

Cumulative Book Index is another place that you want to be listed. Request a CBI Information Slip by sending a note to Cumulative Book Index, H.W. Wilson Company, 950 University Ave, Bronx, NY 10452, (212) 588-8400. They will ask you to send a copy of your book along with the completed CBI form. This listing is free but there are a few qualifiers in order to be listed. Make sure that you tell them that your book is more than 100 pages and that you are going to print at least 500 copies of your book.

Any other tips for first-time authors?

Keep your eyes and ears open for the latest statistics about your subject. Editors like to see statistics. In my case, I researched the number of working mothers and the anticipated increase in the 1990's. I had to prove that there was a need for information on how to start quality day care programs.

Librarians like to have books with an index in order to quickly look up subject matter. The index is an alphabetical listing of the names, subjects, and events, along with page number where it is found in the book. It is also beneficial to have a list of related books, articles, films, and associations in the appendix of your book. Sometimes if a trade publisher is publishing your book, they will ask you to provide an index or will hire someone to do it and charge the expense to you. How can self-publishers get people to order their book if they are not in bookstores?

If you have a nice looking book and you are going to promote it on radio and television shows, you could call Faye DeWitt at New Canaan Bookstore's BOOKCALL. Their number is easy to remember if you give it out over the air. Call her and give her information about your publication, send her your book and press materials and if she is interested in fulfilling orders for your book, she will give you permission to use their number (1-800-ALL-BOOK) during radio interviews.

The toll free number was really a godsend for me when I was doing a segment on "Sally Jessy Raphael" and my books were not in bookstores. If the viewers wanted my book, they would not have been able to purchase it in the major chains or the independent bookstores because I did not have that kind of distribution. Fortunately, the producer of the show flashed that 800 number on the screen and the New Canaan Bookstore received several hundred requests for my book. They ordered the books from me at a discount, and I packed the books in my kitchen and sent them along with an invoice to their office in Connecticut.

Upper Access Book Publishers, PO Box 457, Hinesburg, VT 05461,

also offers a service that enables authors to use their 800 number when doing interviews. Lisa Carlson says, "We'll stock your title and give same-day service to your US and Canadian customers." They do not charge any upfront money or warehousing fee. Call one of the very nice folks at 1-800-356-9315 for information about fulfillment and book publishing. They publish a mail order catalog of the products they carry that has an annual circulation of between 70,000 and 120,000.

How do I distribute a book to bookstores?

There are many ways, although it is not an easy process. However, as a beginning self-publisher you should do all of the publicity you can and make it easy for people to find your book. If you have only published one book, the major chains will probably not want to deal with you directly because of the time and expense of setting up a business account with you. So you need to sell to a distributor or wholesaler and they in turn sell to the stores.

Who are some of the distributors?

Publishers Group West, 4065 Hollis Street, PO Box 8843, Emeryville, CA 94608, (510) 658-3453. PGW sells to bookstore chains and independent bookstores. They charge you a commission to sell your books.

Quality Books, 918 Sherwood Drive, Lake Bluff, IL 60044, (708) 295-2010. They will sell your books to libraries and charge you a commission. Their specialty is non-fiction and they like to review your book/product before its publication date. At one point, I sent them my book *So You Want to Open a Profitable Day Care Center*, and they were initially interested in distributing it for me because they thought it was a timely topic and would sell at least 500 copies.

However, they declined in the end because the copyright date was 1987 and I submitted it in 1988. Give them a call and they will send you information about how to submit your product for consideration.

Can I do my own publicity and how do I go about finding the contact names for radio, television, newspapers and magazines?

There are many directories in the reference section of your library that list names, addresses, phone numbers, editors, producers, etc. You can use these at the library or purchase them directly from the publishers. Since some of them are rather expensive, you may want to share the cost with another author/friend, or purchase them as a desk copy for your writing organization.

The following materials are ones I have found helpful when doing my own publicity:

*The Publicity Manual* by Kate Kelly, 11 Rockwood Dr, Larchmont, NY 10538, well worth the 1991 price of \$29.95. Some of the subjects included: what free publicity can do for you, how to contact the press and get results, how to get on radio and TV talk shows, and how to write press releases.

*Publicity for Books and Authors* by Peggy Glenn, Aames-Allen Publishing Co., 1106 Main St., Huntingdon Beach, CA 92648 (\$14.95,

1991 price). This book is filled with state of the art promotion ideas and is great fun to read.

Do you always see results from your marketing and promoting efforts?

I have found that there is no best way to get on television. I have mailed hundreds of fancy press kits, sent handwritten notes, made phone calls to producers and made personal contacts at conventions. I think that it is just timing and good luck. A combination of different approaches has worked for me. Many, many times, I have said, "This is too hard. I am getting out of this business," but then something good will happen and my enthusiasm is replenished.

Two years ago, I traveled around the country with my children to promote my book, *Start Your Own At Home Child Care Business*, which was published by Doubleday. I sent my press kit to a public relations firm in New York. I was recently selected to be a product spokesperson for a Fortune 500 company. I will be paid a very nice daily rate to promote a new product that has special appeal to parents with small children. My credentials for this opportunity were as a result of being a published author (which to them indicated being an authority on a subject), being a mother of four and on the basis of the video tapes that I sent to the publicity firm. Now you and I know, I am not the most knowledgeable person on the subject, but to the company, I fit the bill of what they were looking for...an example of delayed reaction for the groundwork laid twenty-four months earlier.

Are there national associations I can join to network with other small publishers?

I know that you can't join every one, but a few associations which offer seminars, newsletters and a great deal of information to their members are: Publishers Marketing Association, 2401 Pacific Coast Highway #102, Hermosa Beach, CA 90254; COSMEP, PO Box 42073, San Francisco, CA 94142; and National Association of Independent Publishers, PO Box 850, Moore Haven, FL 33471.

COSMEP is the International Association of Independent Publishers and can be reached at (415) 922-9490. It is the nation's oldest and largest association for small publishers. Many of their members are self-publishers and their services are more geared to author-publishers as well as to smaller publishing companies. Their newsletter, which is an excellent source of ongoing information, comes out monthly. They'll send you a sample copy along with information on membership if you request it.

Where can I find the names of columnists and commentators who might be interested in mentioning my book?

You can find such information in *Editor and Publisher, Annual Directory of Syndicated Service*, 11 W 19th St., New York, NY 10011. In the Literary Market Place you will also find lists of columnists and commentators listed by their special interest: automotive, fashion, health, nutrition, politics, etc.



An important part of your marketing campaign is contacting the appropriate contact names for radio and TV programs that feature books and authors as well as magazines and book review syndicates. Get the Literary Market Place from RR Bowker, 245 W. 17th St. New York, NY 10011, 1-800-521-8110, 1990 Edition \$124.95. Spend a few hours studying this directory to learn about the publishing industry

+++++++ Continued on next card +++++++

#ENDCARD

#CARD

Chapter 2...

+++++ Continued from previous card +++++

How did you sell 3,500 hardcover copies of your book to the Better Homes and Garden Book Club?

The subsidiary rights department of Doubleday sold an initial 1,000 copies of the hardcover edition pre-publication. The publisher and I split the royalties on that sale fifty-fifty as stated in my contract. The book club bought this quantity at a great discount and the book was advertised and sold through the book club. A few months later, post publication, they ordered another 2,500 copies. The royalties that I earned on this sale were charged against my advance.

Having my book listed with the book club was really great exposure for the book. In their catalog, they featured a picture of the book and a descriptive blurb. In the future, I plan to make book clubs a priority to my marketing strategy before publication date. They demand a very high discount because they in turn sell the books at a discount to their book club members. The price that Better Homes and Garden Book Club paid for my book was much lower than I would have to pay for my own book if I wanted to purchase the hardcover edition

What else have you done to publicize books?

I purchased two great books: Top 200 Television Shows, (\$30) and Top Radio Shows, (\$30) both can be ordered by calling Marie Keiffer, Ad-Lib Publications, 1-800-669-0773.

I used this information to make contact with producers and researchers for the major shows. I recommend these directories if you are serious about being on the major shows.

If you have self-published, you may want to call Upper Access Book Publisher, 1-800-356-9315, and inquire about being listed in their catalog. They will want to see a brochure or other descriptive material from you so they can evaluate the appeal of your book to their particular audience.

Do you have any ideas that will increase the chances of being invited as a guest on a television show? Any advice on what to do once you're invited?

Rick Frishman of Planned Television Arts, a NYC publicity firm, offers

the following tips:

- 1) Producers look for a guest who is articulate, takes control of the interview, and, most importantly, talks about a subject that is interesting and useful to their audience. They always consider a guest by asking, "Will my audience care about this subject?"
  - 2) You must have a great subject, deliver a super press kit, and, if you can afford it, it would help to hire a good publicist who knows the producers well.
  - 3) If you give the audience good information and are also entertaining, then there is no problem "plugging" your book.
  - 4) Ask the producer to get the host to mention and show your book. It is better if they talk about the book. That way, you don't appear to be a "pushy" author.
  - 5) Follow-up is the most important part of getting the booking. Producers receive hundreds of books a week. Your follow-up call will make it... or break it. Remember they are interviewing an author - a person - not a book!
  - 6) Guests are not paid to be on shows. They are on for the value of publicity. No money changes hands.
  - 7) Men - business suit and tie. Women - nice dress, solid, red, purple, ... These days the cameras are so good, almost any color will come out fine.
  - 8) Take control of the interview - know your subject inside out - have statistics and anecdotes - be entertaining.
- Patricia Gallagher lives in Worchester, PA and is a writer and publicist who has self published and marketed many of her own books. She consults on book projects and loves to speak at seminars, meetings, or any other gathering of aspiring writers. Call 1-800-ALL-BOOK to order her books.

### Colorkeys

To make your own Colorkey proofs, print color separations with registration marks onto separate sheets. Photocopy them onto transparencies with a color copier (instructing the copier to print the black original in the appropriate color). Then layer your transparencies on top of the black pass printed on paper. Instant colorkeys! Thanks to Bill McLaughlin.

### Laptop Tops

Careful of closing laptop computers with LCD displays when the computer is running or hot. The screen is made of liquid crystals and overheating can change their electrical properties and even their chemical structure. Once changed, the crystals may lose the ability to display information. Major bummer.

#ENDCARD

#CARD

Chapter 3

## The ComputerPhile

Each issue The ComputerPhile answers questions and examines hardware and software that readers have asked about. Topics covered include clip art, buying used laser printers, scanners, laser printer upgrades, data compression backup software, and more.

#ENDCARD

#CARD

Chapter 3...

Used Laser Printers

Getting a Good Deal

by Walter & John Jeffries of BlackLightning  
from The Flash volume 4, issue 1

One of the questions most frequently asked by Flash readers is, 'What about used laser printers?' We have found the laser printers based on the Canon CX (EP) and SX (EP-S) print engines to be very rugged machines. These include the Hewlett-Packard LaserJets, Apple LaserWriters, and printers from many other manufacturers. We liken these robust machines to the Model A's of years gone by. They have enough features to make a very serviceable machine, yet are so well built they last way beyond their expected lifetimes. We know of numerous LaserWriter Plus machines that have printed over a million copies and are still running strong. My own LaserWriter, purchased used years ago, has printed over 500,000 copies and I expect to keep using it for years to come.

For a good source of used laser printers, check out your local university or college. Large corporations are another good bet. They regularly upgrade their equipment and sometimes sell off old machines at a real bargain. Several years ago I bought three Apple LaserWriter Plus printers for \$1,400 each including the built in Adobe Postscript. This was when they were typically selling for over \$2,500 from the used equipment houses found listed in the backs of computer magazines such as PCMagazine and MacUser as well as the yellow pages. Scout around; you may find a great deal.

Of course, you have to be careful not to get burned. If you are not familiar with laser printers, take along a friend who is. Try to get

some form of written guarantee, 30 days is reasonable, from the seller. They may not be willing, but it is worth asking. At least run the machine and print out some copy so you know it basically works. Which machine should you get? There are three basic factors to consider:

- Print Engine type and manufacturer
- PostScript or Non-PostScript
- Interfacing to your computer

### Print Engine

The print engine is not critical, although it is simpler to have just one type in an organization because the cartridges and other parts are not interchangeable. The Canon print engines are the best and have the added advantage of being usable with Transfer Toner. The Canon engines come in several types, the most popular being the CX and SX. The advantage of the SX over the CX is that you can use the long lasting Emerald drum for your cartridges and some people claim to get darker blacks with the standard toner. We have not discussed other print engines because most of our experience has been with the Canon CX and SX based laser printers. Others, such as the Kyocera, Ricoh, and Canon LX , may or may not be good buys in used machines.

### PostScript

If you are going to be working with graphics or precise type then you will probably want Postscript. Postscript is a printer language that lets you do the greatest graphics and text this side of Hell† [FOOTNOTE: †Linotype-Hell Co. is a producer of high-end typesetting machines for publishing houses.], and some of their machines use it too. Its biggest feature is that fonts and graphics can be enlarged or shrunk (scaled) without getting the jaggies. However, you can't take advantage of Postscript unless the software on your computer also works with Postscript. Check your software's reference manual if you are unsure. All Macintoshes work with Postscript; some PC programs use Postscript. If you need Postscript and want higher resolution and a very fast printer, one option is to buy a cheap used machine and install the Accel-A-Writer from Xante Corp of Mobile, Alabama. This is a series of replacement motherboards starting at \$1,295 that can have up to 16 megabytes of memory. The board adds Postscript compatibility, a fast RISC processor, 35 fonts, an optional hard disk drive, and 600dpi resolution (normally 300) to the Apple LaserWriter, LaserWriter Plus, LaserWriter II (SC, NT, & NTX), Personal LaserWriter (SC & NT), and the HP LaserJet Series I and II. Because these boards completely replace the machine's motherboard, you could save a bundle by getting a printer with a blown motherboard and installing the Accel-a-Writer. Or, you can sell your good controller board that you removed to add the Accel-a-Writer. We have looked briefly at this machine and talked with some users.

We are impressed with what we've seen. We just received an evaluation unit from Xante and will review it in the next issue of The Flash. As part of the review, we printed the mechanicals for this issue of The Flash using the Accel-A-Writer. See page 115 for the review of the Accel-A-Writer.

## Interface

If your computer won't talk to the laser printer then you've got one very expensive paper weight. Fortunately, most computers now interface to most printers. At worst you might need a special cable or software driver. The interface consists of two levels, the hardware (communications port and cables) and the software drivers.

Macintoshes, in general, only work with printers with a serial or Apple/LocalTalk port. PC computers typically accept both serial and parallel ports (often called a Centronics port).

The software to control the printer from your machine must know how to talk to the software on your printer. Ask the person selling the printer about this. If they can't help you, try calling the printer manufacturer. The number should be in the front of the manual.

There are a lot of printer drivers that have been written for the PC computers, but until a few years ago Macintosh owners had very few choices. They could use an Apple laser printer, or they could use an Apple dot matrix printer. The printer driver software that was available for the Macintosh was not very well implemented. Things have changed significantly though; there are now several very good packages available that dramatically expand the printer choices for Macintosh users.

One package that we have been reviewing this fall is the the JetLink Express from GDT Softworks, Inc. The parallel version we reviewed is readily available in the USA for \$249 directly or \$179 from MacConnection (the serial version is \$159 and \$89 respectively).

JetLink Express comes with a serial to parallel translation cable, a small wall transformer to power it, four disks containing seventeen printer drivers for the Canon Bubblejet, Canon LBP Laser, HP LaserJet, HP DeskJet, and HP DeskWriter printers, and a thick manual. I ignored the manual, inserted the HP Drivers Disk, plugged my HP Personal LaserJet IIP into my Outbound Wallaby (a Macintosh compatible portable). No luck. After a trip to the manual I called tech support. They were very helpful and referred me to the HyperCard setup file on the disk. This little program has step by step instructions on quickly getting started with all the popular machines. Moments later my Mac and the HP IIP were happily chatting away, spewing out graphics and text. I tested JetLink Express with a wide variety of software including HyperCard, MS-Word 4.0, MS-Excel, Sys1, Paradise Market II, MacPaint, DeskPaint, MacDraw and many others. The only program I couldn't use was Adobe Illustrator, which requires a PostScript printer.

The software was very intuitive and Mac-like. I'd give the software

an A+ and the manual was top notch as well. Things I like to see in a manual are a well thought out table of contents, system requirements, a quick start section, detailed descriptions of all of the program's workings, a trouble shooting section, a glossary for unfamiliar terms, and of course, a comprehensive index. JetLink Express gets thumbs up in all areas. The manual's convenient 5.5" x 8" size, well laid out screen shots and carefully chosen fonts make for easy reading. In addition, it includes an easy to use compatibility chart for both printers and software. GDT appears to have tested their software on 32 different printers and it should work with many others that have Canon or HP printer emulation. Lastly, the manual had an Application Notes section with many of the little tricks to use with 29 major software packages; a real time saver. If you need to connect to a Hewlett Packard or Canon printer, check out the JetLink Express. We're impressed!

We are often asked what scanner we use in our work. Until recently, we used a Chinon based VisionScan overhead scanner from Mirror Technologies. It did the job for simple graphics, but we couldn't do grey-scale or color and the resolution was only 200dpi. This summer we began looking for a new scanner; reading the reviews and talking to people. At the MacWorld Expo (a good place to get a great deal) we saw a wide selection and the prices of the color scanners were finally down in our range. After examining and trying units from the different manufacturers, we settled on the 600ZS from Microtek Labs.<sup>†</sup> [FOOTNOTE: <sup>††</sup>Be careful not to confuse Microtek Labs in CA with Microtech International in CT. They are totally different companies. On a related note, we have a Microtech International Syquest Removable 44M hard drive, which crashed this week as we were working on The Flash. The good news is that the drive has a two year warranty from Microtech International. The bad news is they stopped selling them about a year ago and refuse to supply a loaner while ours is being repaired, even if we leave a VISA number to secure it. This leaves us in a bit of a bind. We based our original purchase on their claimed loaner program. Before they dropped the drive they talked a lot about their two year warranty and how they would provide the best possible service. Now we are in a pinch and find out differently. Caveat Emptor.] It retails for \$2,195, but it has a street price of about \$1400. This flat bed scanner does 24 bit color in up to 600dpi. For most applications the 600dpi resolution is not necessary, but it sure comes in handy when I want to blow up a postage stamp or a wallet photo to a full page and still have good detail. Other than that, I tend to use the scanner at 100dpi to 300dpi. The color is excellent; although exact color matching is not a requirement of the work I do. The scanning seems slow at about 3.5 minutes per full color scan, but this is comparable to other quality scanners on the market, so we can't complain. A big plus was that it came with the full featured version of the Adobe Photoshop (\$895 list), the hottest color image editing program we have ever seen. The

scanner is directly accessible from within Photoshop and can also be used via a Desk Accessory under the Apple menu.

Using the scanner was simple enough that we were able to start using it right out of the box without consulting the manual. The manual, which we did eventually read, is actually a set of very thin booklets and it was bothersome to have to flip between them.

Installation and use of the scanner with both PC and a Mac are covered. Although the hardware manual had a short index, none of the three software manuals had an index. This made them a bit harder to use, and cost Microtek points with us. Two problems:

1) The SCSI cable we received was bad. Other vendors have immediately sent us a replacement cable no charge when we had a bad cable. Microtek insisted we return it at our cost before they would ship out another cable. We didn't bother because we had another cable on hand; but, if we hadn't, we would have been stuck without a scanner until our cable got to them, they processed the return, and the replacement cable came back to us.

2) When we purchased the scanner, we were told, by Computer Town and by Microtek at the trade show, that it would ship with a free copy of ScanMatch software. It didn't. A call to tech support revealed that the software was delayed but we should get it in October. It is now December. We recently received a mailing from Microtek saying that the ScanMatch was available, but we would have to pay \$10. Rather disappointing. Calling them revealed that the software was shipping at no charge. Clearer literature and communication from Microtek would have been helpful.

The Microtek 600SZ is a wonderful piece of hardware with good, intuitive software at a great price. As an added bonus, it comes with Adobe PhotoShop. It works great and we have no complaint after putting it through its paces for three months. On the other hand, the manuals and support could use some serious improvement. Overall we give them a B+.

Clip Art:

This fall we have received several clip art packages for review. Three of our favorites were those from Library Educational Institute, 3G Graphics, and MicroMaps. These are three very different sets of images for very different needs. The Library Educational Institute, as you might guess from its name, focuses on education and the needs of libraries. The images, predominantly scans of pen & ink artwork, remind us of our text books from grammar school, leaving us with a warm, fuzzy feeling. They're reasonably priced at \$79.95 per set (about 100 images) and LEI has offered a discount of 33% to readers of The Flash through the end of March 1992. The images are compressed in easy to use Compactor Pro self-extracting archives. A big plus because you get more images in less space. The image sets are divided up into seasons (Fall, Winter, Spring, Summer) and are available for both the PC and Macintosh, bitmapped and in EPSF (Encapsulated PostScript Format). We were able to open the images

with Adobe Illustrator and edit the graphics to customize them. The manual was good and images were easy to find using the accompanying catalog. If you are in a library or school program, check out LEI.

3G Graphics' Images with Impact are sharp and modern. Topics include: Accents and Borders, Business, Graphics & Symbols, and People. These images were all created directly in PostScript. This gives them sharp, clean, well controlled lines, excellent for use in business, newsletters and presentations. The selection and variety of images was excellent. Priced a little higher than LEI at \$99 per set, they include quite a few more images (~200 per set). While I would give them a small negative for not compressing the files to save space, their manual is simply terrific, with pages upon pages of helpful tips, hints, techniques, and ideas for getting the most use out of the graphics. Images with Impact are available in EPS and bitmapped formats for the PC and the Macintosh.

While all the packages we chose were good, we do have a definite favorite. MicroMaps has produced some incredibly beautiful cartography with their Presentation Quality Maps series. The view of the United States was nice, Europe impressed us, but we were blown away by the Global Perspectives (\$49). The Global Perspectives are 18 views of the earth from 100,000 miles out in space showing country boundaries in perspective. All the artwork is of the highest quality and ready for professional use. Our only complaints were 1) they were not compressed files, 2) they were over packaged (too much plastic wrap), and 3) the image catalog was poor, making it hard to find images on the disks. If you ever need maps, call MicroMaps and at least get their brochures. Presentation Quality Maps are available in EPS and bitmapped formats for the PC and Macintosh computers as well as MacDraw II for the Macintosh.

+++++++ Continued on next card +++++++

#ENDCARD

#CARD

## Chapter 3...

+++++ Continued from previous card +++++

Questions, ideas, computer tips, software or hardware products you would like to know about... Write to:

The ComputerPhile on CompuServe: [73130, 1734]  
c/o BlackLightning, Inc.  
Riddle Pond Road  
West Topsham, VT 05086

## Sources

Be sure to tell them you read about it in The Flash Compendium.  
Use the Reader Response Card to receive more information.



Images with Impact [Clip Art]

3G Graphics

11410 N.E. 124th St. #6155

Kirkland, WA 98034

1-800-456-0234

Reader Response Number 21

JetLink Express [Mac Printer Interface]

GDT Softworks, Inc.

4664 Lougheed Highway, #188

Burnaby, BC Canada V5C 6B7

Phone: (604) 291-9121

Fax: (604) 291-9689

Reader Response Number 22

Library of Clip Art: Disk [Clip Art]

Library Educational Institute, Inc.

Rural Route 1, Box 219

New Albany, PA 18833

Phone: (717) 746-1842

Fax: (717) 746-1114

Reader Response Number 23

MacConnection [Mac Mail Order]

14 Mill Street

Marlow, NH 03456

1-800-334-4444

Reader Response Number 24

Microtek 600ZS [Color Scanner]

Microtek Lab, Inc.

680 Knox Street

Torrance, CA 90502

(213) 321-2121

Reader Response Number 25

Presentation Quality Maps [Clip Art]

MicroMaps

POB 757

Lambertville, NJ 08530

Phone: 1-800-334-4291

Fax: (609) 397-5724

Reader Response Number 26

Accel-A-Writer [Printer Upgrade]

Xante Corp

2559 Emogene Street

Mobile, AL 36606  
Phone: (205) 476-8189  
Fax: (205) 476-9421  
Reader Response Number 27

To use the Reader Response Numbers (RR#) simply circle the RR# on the enclosed Reader Response Card and mail it to us at: The Flash, Riddle Pond Road, West Topsham, VT 05086 or fax it to us at (802) 439-6463.

#### Pick Me Up

The paper feed cams, which pick up the paper in laser printers and copiers, are covered with textured rubber that lifts the paper and passes it through the machine. With age and use, the rubber on the cam may harden and lose its grip. Thus, the printer will miss the page pick-up, causing the top of the print to appear half way down the page. Wiping these rollers with Printer Cleaning Fluid or acetone may revitalize the rubber and revive the grip. It is important not to use rubbing alcohol because it will dry out rubber. Increasing the spring pressure may also alleviate the problem.

#ENDCARD

#CARD

Chapter 3...

#### Upgrading Your Laser

The Xante 600dpi Postscript Accel-a-Writer

by Walter & John Jeffries of BlackLightning  
from The Flash volume 4, issue 2

Last issue we looked at used laser printers and briefly touched on an exciting new product that will take your existing old 300 dots per inch (dpi) printer and boost it up to 600dpi as well as adding postscript and a much faster processor.

In the past we typically did all of our proofs of The Flash on our laser printers at 300dpi, but when it came time to print the actual mechanicals, the hard copy for the offset printing company, we would go to a local typesetting bureau which had a linotronic typesetter that can output at 1200dpi. The problems with the service bureau are:

1. Very high cost - \$15 per page.
2. Slow turn around time - There's nothing like being able to proof high resolution copy as you go and to be able able to redo a page at the last minute.
3. Linotronic output often comes out a little different from laser printer output. Doing your own typesetting avoids this problem.

Linotronic typesetters cost a lot of money, Typically between \$30,000 and \$40,000 including all the extra equipment needed such as the processing machine. We were spending about \$1000 to \$2000 a year on typesetting but it's a bit hard to justify spending \$30,000 for a linotronic. In the past couple of years several companies have brought out higher resolution (400dpi to 1000dpi) laser printers for \$4,000 to \$9,000. We sent away for literature from these vendors and tried their machines at the computer trade shows. We were impressed and about to purchase one this summer when we found out about a company named Xante of Mobile, Alabama. The Xante board, the Accel-a-Writer, is a logic board upgrade rather than a whole new machine. An upgrade better fits our philosophy of reusing and recycling and the price was right at just \$1,695. After looking over their literature, seeing one at the Boston MacWorld show, and talking with some other people who have installed the Xante upgrade, we made the plunge and got our own.

We purchased ours just before we went to press with our Winter (4.1) issue of The Flash and were amazed at the increased speed. We use a lot of graphic elements in The Flash which, in the past, slowed printing to a crawl. Pages that used to take up to half an hour to image and print now zipped through in 3 minutes with the Xante board. Needless to say this saved us a lot of time in our layout and proofing cycle.

Installation was very simple. If you're at all handy with a screw driver you can do it yourself. Just be careful to get the right connectors connected, and keep yourself grounded to avoid zapping the logic board or printer with static electricity. The installation is well covered in the Accel-a-Writer manual with clear text, photos and illustrations. If you're not handy, then any dealer should be able to do it for you for a small fee. The one improvement I'd like to see on the manual is to have it perfect bound, like a paper back book, rather than this short little manual in a huge plastic binder. It just takes up too much space on my bookshelf. This is a little thing and maybe not appropriate for a new and evolving product that will undoubtedly see updates and addendums.

The first logic board we got was well laid out and looked professional. This is important, as a good design is less likely to have problems crop up later than one that is a hack. Just before we went to press in the spring we received an upgraded board from Xante which fixes most of the minor bugs. The new board looks even better, with a much lower component count. Dip switches on the logic board allow you to switch a variety of options on or off including:

1. Resolution - 600 x 600dpi, 600 x 300dpi, 300 x 300dpi
2. Faster printing (builds one page while another is being printed) vs. more fonts loaded into the logic board RAM. You'll need more memory for this.
3. Communications settings including speed and handshaking, and protocol.

#### 4. Postscript or HP PCL IV emulation.

The Accel-a-Writer comes with floppy disks for both the PC and the Mac. The Mac disk includes a driver for the printer and download files that let you control features like formatting the optional printer SCSI disk, turning on or off the startup page, and adjusting the margins of the page. We found we didn't need the drivers as the new brainy LaserWriter Plus/Accel-a-Writer works fine with the existing Macintosh System 7.0 print drivers we use with both System 7 and System 6.0.7.

Once we were all setup, including selecting the new printer name in the Chooser, the Accel-a-Writer worked just like the old LaserWriter Plus. Except, the printing was much faster (see the sidebar below) and the 600dpi resolution made all our graphics look that much better (see resolution examples in the sidebar on the previous page).

Previously, I've always been hesitant about including scanned photos because with the 300dpi of the standard laser printer, photos just don't look that good and trying to get them to come out right on a lino was a costly and time consuming experiment. So, the first thing I did was scan photos and see how they looked with the Accel-a-Writer. The results were good. While they were not magazine quality, the quadrupled resolution (double in both directions) really did make a difference. Certainly good enough for a publication like The Flash which is not printed on glossy stock.

Over the next several months we gave our new toy quite a work out, printing just about everything in our repertoire to try to get the board to fail. The result? It performed miles better than our old laser printer. Yes, we did succeed in generating files that wouldn't print, but they were generally files that had hung our older printer as well. The Accel-a-Writer uses the Phoenix Page Postscript clone and the only area where it seemed to perform poorly was one file where we had drawn a very complex graphic, and then turned it into a pattern in Adobe Illustrator 3.0 and duplicated it 64 times on the page. The Accel-a-Writer appeared to be working but it went on for eight or nine hours without any apparent progress. Finally we had to kill the job. This file had printed on the older LaserWriter with true Adobe Postscript, although it had taken over an hour to build.

You can always find a way to crash or hang if you try hard enough and that file was rather extreme. We suspect the problem relates to the higher resolution and the increased memory needed for the greater resolution.

- - - - -  
Speeding Along...

How does the Xante compare to an Apple LaserWriter? In our tests we used a 20MHz 68030 Macintosh and Local Talk. Overall we found the Xante board to be about six to seven times as fast as a LaserWriter Plus from Apple. Some test times in seconds for the two machines were:

Page	Type	Xante	LWP	
196	RSG4.5a Text	17	117	
106	EPS Art & 1 Font	83	456	
195	1061pi TIFF & Text	30	164	
--	Large GeoQuery Map	306	1579	
- - - - -				

#ENDCARD

#CARD

Chapter 3...

There were a few other minor annoyances, but nothing that would make us want to ever return the board. These include the fact that it does not continue processing if the printer cover is open. Very rarely the paper jam light or paper out light will come on as it should, but then stay on when the problem is rectified. Then we must turn the printer off and back on again to get it to work. The margins are about one thirty-second of an inch smaller than the print area shown on the screen. The LaserWriter Status program we have doesn't work because it expects a MC68000 microprocessor on the laser printer logic board rather than the AMD29000 chip. Lastly, when a print job dies because it was not properly built by the application, as sometimes happens, it just vanishes, rather than coming back and telling you there was a problem. We've talked about all of these issues with tech support and they're working on fixing them. We found Xante technical support people to be very helpful and in general they knew the answers. The only problem was that their lines were often busy and we had to leave a message. When they didn't know the answer, they said so, and got back to us in a reasonable amount of time with the right answer. Good technical support is important, especially with a complex and powerful product like the Accel-a-writer. Xante even includes a fax form, with the manual, for technical problems.

All in all, we're very pleased with the Xante Accel-a-Writer. It is well engineered, very compatible, very fast, and the higher resolution is just what the doctor ordered. We no longer have to send The Flash out of house to have it typeset at a service bureau. This saves us almost \$600 per issue and let's us produce a better newsletter because we can experiment more, using the high resolution all the time. The cost savings doesn't include the dramatic time saving which saves us another couple hundred dollars an issue. If you're looking for increased speed or resolution, if you send a lot of jobs to the typesetter, or if you are printing photos for desktop publishing or transfers, then check out the Xante board. It pays for itself in a few months.

In the original printed article there was a sidebar showing the differences between 300dpi, 600dpi and 1272dpi. Because this relies on printing technologies, this sidebar is not reproducible on a CD-ROM. The sidebar can be seen on page 112 of the Flash Compendium

1992, available from BlackLightning (1-800-252-2599) for \$12.95 plus shipping.

- - - - -  
In a Flash... Rating: A

Accel-a-Writer

Product: 600dpi laser printer controller upgrade

Company: Xante, Corp.

2559 Emogene St, Mobile, AL 36606

1-800-926-8839 or (205) 476-8189

Compatibility: Apple LaserWriter, LaserWriter Plus, LaserWriter IISC, IINT, & IINTX, Personal LaserWriter SC & NT, HP LaserJet II

Options: 300 x 300 dpi or 600 x 600 dpi

2, 6, 8, 12, or 16MB RAM

Price: \$1,295 at 300 dpi

\$1,695 to \$2,695 depending on RAM at 600 dpi

Features: Well designed board, AMD29000 RISC Processor, Pheonix Page Postscript, all the features of Apple LaserWriter NTX, External SCSI hard drive, Dual page processing for faster throughput, Flash ROMs for on board storage of 16 to 20 downloadable fonts, Simultaneous interfacing to AppleTalk, RS232 Serial, & Centronics Parallel ports, HP PCL IV Emulation.

Pros: Fast, makes good use of memory to process the next page while first page is printing, 850 dpi effective resolution for greyscales produces excellent quality prints of scanned photos (197 grey levels at 106 lpi), Good knowledgeable technical support, Excellent response to problems.

Cons: Slow tech support response time - need more staff, No parallel port on CX controller board for series I laser printers, actual print area does not quite match screen print area.

Recommendation: If you have a compatible laser printer and need more speed or resolution, buy this board and get at least the 8MB of RAM if 600dpi.

Ratings are A excellent, through F failed with + & - subgrades.

- - - - -  
#ENDCARD

#CARD

Chapter 3...

Two other neat items I'd like mention before we close are DepthKey and the Clip Art Network. DepthKey is put out by Overpriced Software and costs just \$5. It is an F-Key that installs in your Macintosh system file. When you press shift-command-7, DepthKey pops up indicating the depth (ie. B&W, 4 colors, 16 colors, 256 colors, etc), you can also press the mouse button at this point and a menu appears with choices to change the depth and color or grayscale

settings of the monitor containing the mouse. Then when you restart, it switches back to the default setting in the control panel. The reason this is so handy, is that we normally run our Mac IIci in B&W mode. This is the fastest mode for programming and layout work. DepthKey allows us to quickly and temporarily switch to color for when we're doing transfers or other color work.

The Clip Art Network (CAN) is an collection of 365 Postscript (EPS) files for \$99 for either Mac or PC. The images are divided up into 15 categories touching on almost every desktop publisher's need including: Nature, Medical, People, Symbols, Play, Sports, Home, School & Work, Business Logos, Spiritual, "In the Garage", Going Places, Scenes, Maps & Flags, and Potpourri. These images are listed in an alphabetical index and in a pictorial catalog by category. Because they are Postscript, you can edit the images in Adobe Illustrator, Aldus Freehand, or CorelDraw. The CAN manual even includes a discussion of how to edit the images; a handy review for those not familiar with the drawing programs. That's a good deal, but what is really exciting is that Jonathan Dailey, the founder of CAN, is working to organize what amounts to a clip art exchange. Typically, the way a clip art company works is they have their staff artists or a few freelancers who generate all of the artwork, and they're not interested in artwork from outside sources. This means that if you've done some images that you'd like to have published, you've got to do it all yourself, from drawing to package production to marketing & sales. What CAN offers is a chance for anyone with some drawing skills to submit artwork and earn royalties if their artwork is accepted and sells. If your interested be sure to contact him for more details.

Questions, ideas, computer tips, software or hardware products you would like to know about... Write to:

The ComputerPhile                      on CompuServe: [73130, 1734]  
c/o BlackLightning, Inc.  
Riddle Pond Road  
West Topsham, VT 05086

#### Sources

Be sure to tell them you read about it in the Flash Compendium.  
Use the Reader Response Card to receive more information.

Accel-a-Writer            [PC or Macintosh]

Xante Corp.

2559 Emogene Street

Mobile, AL 36606

1-800-926-8839 or (205) 476-8189

(205) 476-9421 FAX

Reader Response Number 27

Depth Key            [Macintosh F-Key]

OverPriced Software

POB 202

Peterborough, NH 03458

No phone number available.

Reader Response Number 28

Clip Art Network [PC or Macintosh]

11024 Montgomery NE #311

Albuquerque, NM 87111

1-800-869-8520 or (505) 294-8520

(505) 271-2600 FAX

Reader Response Number 29

To use the Reader Response Numbers (RR#) simply circle the RR# on the enclosed Reader Response Card and mail it to us at: The Flash, Riddle Pond Road, West Topsham, VT 05086 or fax it to us at (802) 439-6463.

#### Raising a Point about Raised Print

Thermolithography (raised print), which is sometimes used on letterhead and business cards, will dirty your laser printer because the raised ink is a wax that will melt on your fuser rollers. It smudges on the page as it goes through the heat of the fuser assembly, and may also wear down the fuser roller. We suggest that you avoid using pages with raised print in the laser printer, and when considering the purchase of a special letterhead, first ask for samples to try. If you must use paper with raised print, plan on changing your fuser wands very often. This will help keep the printer clean, giving you better copy and extending the life of the fuser rollers. Extra felts are available on page 213.

#### When the Lights Go Out in Laser Land

"Should I turn my printer off when I'm not using it or should I leave it on?" That's a very good question that a lot of people have asked themselves, printer manufacturers, computer consultants, and BlackLightning. Why should you leave it on? Because turning electronic equipment on and off shortens its lifespan. Ideally you only turn the machine on once a day and off once a day. Why should you turn it off? Because the heating elements in the fuser assembly of the typical laser printer burn up a lot of power. That means bigger electric bills at the end of the month, more power plants, more importing of foreign fuels, and more pollution. What can you do? The first thing is to run print jobs in batches whenever possible. That way, if you can do all your printing at one time during the day you can turn the printer on, print your work, and turn it off for the day. If this is not practical, then consider popping open the lid of the printer when it is not being used, but must be turned on. With the lid popped most laser printers turn off their heaters, fuser assemblies, and other power hungry electronics.



## A One-Sided Affair

If you do a large amount of printing on one part of the page (many copies of a dark graphic or text just along one edge) then you may fill up the waste reservoir in line with the image, causing it to overflow. This can produce ghosting, smearing, and spilled toner in the machine. The solution is to gently rock the cartridge at approximately 45 degree angles to redistribute the toner. Clean the corona wires in the cartridge after you do this to remove any toner that may have spilled internally.

#ENDCARD

#CARD

Chapter 3...

## Data Management

### Disk Compression & Backup

by Walter & John Jeffries of BlackLightning  
new to the Flash Compendium

Eventually we all run out of disk space. There must be a basic law of the universe that states that your data will expand to fill, and overflow, the available storage space. There are a number of solutions to the problem including culling unnecessary files, archiving old data, and getting a bigger hard disk. Sometimes none of those are an option. Especially if your primary machine is a portable, you need all of your data, and they just don't make bigger hard disks for it yet.

There are a few utilities available for both the Mac & PC that can help by compressing your files and giving you the illusion of a bigger disk. AutoDoubler 1.0.6 (\$48 street) is a control panel compression utility for the Macintosh from Salient Software, makers of the popular DiskDoubler compression software.

I installed AutoDoubler in about three minutes and just about forgot about it after that. This is quite a testimony to its ease of use and manners. To give you an idea of just how uncomplicated AutoDoubler is, the manual is very comprehensive (it even includes an index) at only 18 pages! AutoDoubler works completely in the background, compressing the files on the specified volumes whenever you have not used your computer for a user-definable period of time.

I did run some tests to determine AutoDoubler's performance and the loss of speed I would have to accept to use the product. (Software compression programs trade speed for space.) AutoDoubler freed up between 35% and 50% on my hard disks, but some of my applications open a little slower now: as much as 50% slower. Opening a document from the Finder was sometimes slowed down, by as much as five times for a large PhotoShop image, and sometimes sped up, by as much as 48% for a Think Pascal project. These numbers may seem

large, but once the program is up and running you do not notice a significant slowdown. While I wouldn't recommend it on a slow machine, on the whole I lose very little time to AutoDoubler. The time that AutoDoubler takes to compress a file is very difficult to measure, and not very important, because it only compresses when I am not using the computer. If I so much as move the mouse AutoDoubler stops working and I have the complete attention of the computer. The slight degradation in performance is very much worth the increased space on each volume. The compression achieved by AutoDoubler is not stellar (StuffIt and DiskDoubler will sometimes get as much as a 90% savings), but the ease of use and ability to open and modify a compressed file with the original application are very handy. I use AutoDoubler to keep my working files small and use StuffIt and DiskDoubler to make archival copies of files I cannot throw away, but do not expect to need in the near future.

AutoDoubler is a control panel that you install in your System Folder. AutoDoubler is completely compatible with System 7, although all of its features are available under System 6. In the control panel you can set such things as the number of minutes of inactivity before AutoDoubler activates, the specific files that AutoDoubler will not compress, which volumes will be "doubled" and the age a file must attain (in hours, days or weeks) before it is compressed. You can also check the status of a particular hard drive: how many files, how many compressed, percent free space and effective size of the disk. AutoDoubler has what looks to be very good error detection and correction features. Because AutoDoubler is so stable, and I do not wish to tempt fate, I have not tested these features. I did not try unplugging my computer while it was in the process of compression. The manual claims that this will not result in any lost data. I haven't had problems, even when I crash while it is working.

There are a few things that could be improved in AutoDoubler. It would be nice to be able to filter files by their TYPE and CREATOR. These are tags associated with every file on the disk that tell the Finder what to do with them; an application's TYPE is APPL, the creator of a file created in Microsoft Word is MSWD. That way you would not have to go into the control panel for each new file you create you don't want compressed. There are also a number of programs that are incompatible with AutoDoubler. Most of these are known by Salient and they are working to fix the problems. For example, 4th Dimension will not work with compressed files; as a work around Salient has set AutoDoubler to ignore all the files created by 4D. The problem with this is that 4D data files are often very large and it would be nice to cut them down to size with some compression. The last problem is not really bad and is not likely to be fixed: If you are using a portable computer with a disk that spins down when it is not used, you will find that the drive runs constantly after you install AutoDoubler. This will tend to use more power and drain your batteries faster. To avoid this, try setting the delay before

compressing to something very long like 300 minutes and leaving the computer on each night. AutoDoubler will not bother you during the day while you work and it will work at night to compress the files you created that day.

MoreDiskSpace 1.1 (\$44 street) is another automatic disk compression utility from Alysis, (415) 566-2263. I was less impressed with Alysis' offering. Their copy protection scheme is buggy, the program requires more RAM to work well, and MoreDiskSpace takes a very long time to relinquish my computer when I need it.

MDS works in much the same way that AutoDoubler does: once installed and configured, you just let it run and it reduces the size of your files by 35% to 50%. The compression rate seems to be slightly better than that of AutoDoubler for graphics files and slightly worse for Applications and word processing files.

One of the problems with MDS is that it occasionally announces that it is registered to another computer and I must retype the serial number. Also, when I asked it to compress my disk, it did so and promptly crashed. The technical support people told me that this is because I allowed it to compress the System Folder. Poor design on their part. AutoDoubler knows enough not to mess with the System Folder. MDS also freezes up during startup if the application is in the StartUp Items folder on my System 7.0 startup disk, where the manual tells me to install it. Finally, because the program is a full application and not a control panel, it swaps to the front every time it starts compressing. Thumbs down to MDS, it gets a failing grade. We'll stick with AutoDoubler any day.

#ENDCARD

#TAG C3S3P1.pct

#CARD

Chapter 3...

Backing Up...

Backing up your data is a must, but too few of us do it. For the past month we have been evaluating four packages for the Macintosh that attempt to take the drudgery out of backup by automating the process:

- Backmatic 2.01 (\$99), from Magic Software,
- Norton BackUp of Norton Utilities 2.0 (\$149), from Symantec,
- AutoBack 3.0 (\$125), from TerraNetics,
- SnapBack 1.0 (\$129), from Golden Triangle.

None of these packages is ideally suited for all users; each one of them has its unique features and faults. All of them work well and seem to be very stable. These programs are designed to perform a complete backup during the set up process and incremental backups of the files changed thereafter. They all provide some way of telling the program which files to back up, a warning at Shut Down that you

need to back up, and some way to schedule when your backups will occur and where they will be placed. These features all help to keep your backups as current as possible, yet limit the network traffic if you are backing up to a server volume. While evaluating these products I looked for the areas where they differed in their implementation of the basic automatic backup solution.

One of the most important features of a backup program is the ability to easily restore one or many files from the backup volume. Backmatic, AutoBack and SnapBack make restoring very easy by storing the files in Finder format and by providing a Restore function in the program. This means that you can look at the backup volume in the Finder and restore one or two files. You can also use the restore function provided to restore many files from many different folders more easily than you can in the Finder. Each of these three can be configured to store the files as a mirror of the main disk or as time stamped archives. Because Norton BackUp saves all files in its own proprietary, compressed format, you have to use the program to recover any files.

Another important feature of any backup program is compression. This is especially important when backing up to floppy disks or to relatively small fixed disks. Backmatic, AutoBack and Norton BackUp provide a way to compress your backups. Norton BackUp uses its own compression engine; AutoBack is designed to make compression calls to Salient's DiskDoubler, if installed; and Backmatic can use either DiskDoubler or Aladdin's StuffIt Deluxe. Of these three methods, DiskDoubler delivers the greatest compression on average and Norton BackUp the least. However, Norton Backup delivered the fastest throughput. If your backup is happening at night, as ours does, then the speed may be less important than the compression. SnapBack doesn't do compression on the files that it backs up. We like the flexibility of Backmatic's compression options best.

The next aspect considered was the programs' ability to filter the files that it backed up. Each of the programs reviewed provides this ability, however they implement it in very different ways.

AutoBack's method is the simplest; you surround the name of any file or folder to be excluded with square brackets ([]). Norton BackUp and SnapBack allow you to specify which files and folders to back up and what to do with new files. Backmatic allows you to tell it which volumes and folders it should look in for files to back up, specific file types and creators to include or exclude, and specific files to include or exclude. For example, you could exclude all applications and all files created by StuffIt, but include one specific file created by StuffIt. Of the four programs, Backmatic's powerful scan and filter settings are the most impressive, although they may be a bit formidable for the average user to master. Fortunately, the program comes preconfigured with applications and most of the System folder excluded, which is the way most users would want it set up.

One final feature is an easy way to schedule the backups. There are

several ways to schedule a backup: at Shut Down, timed, and continuous. All of the programs can be set to perform an incremental backup when you choose Shut Down at the end of the day. Backmatic, Norton BackUp and SnapBack can be told to perform a backup at a specific time on a particular day. AutoBack is the only program reviewed that will perform a continuous backup of all the files that you specify. Norton BackUp's scheduling system is the most powerful.

#ENDCARD

#TAG

#CARD

Chapter 3...

SnapBack was the least suitable for our needs. SnapBack is based heavily on client-server concepts. It requires one computer to act as the server for several other machines and requires you to dedicate an entire drive to your backup. This is fine if your network consists of many users, but ours has only a few. SnapBack is the only one of the group that will password protect the files in your backup. However, you are required to determine in advance the amount of backup space allocated to each user. Changing this allocation is rather difficult after the software is up and running.

The other three packages are more oriented toward the single user, although they work fine on a small distributed network. Each one of these products has its strengths and weaknesses.

AutoBack's main strength is its ability to perform continuous backups, thus your backup files are never more than five or ten minutes out of date. AutoBack is the only program reviewed that provides this level of security. However, there is a price to be paid for this absolute safety: every time a file is saved, from whatever program you are using, AutoBack wakes up and copies it to the backup disk. Fortunately, long files can be scheduled to be backed up at the end of the day when you shut down the computer. There are two problems in the way AutoBack was implemented. First, AutoBack tries to backup any file that needs it when I restart my computer as well at Shut Down. This is rather annoying for me, as a programmer and reviewer, because I find that I restart my computer several times a day. Second, there is no way to set the time for a backup, such as at noon when I go to lunch every day. One final problem I had with AutoBack is that it requires me to change the names of the items I want ignored: I have to put square brackets ([]) around the name.

Backmatic would be my first choice for all of our backup needs except for a few small but significant problems. As mentioned above there is a choice of the type of compression used, Stuffit or DiskDoubler, and the backups can be set to happen at Shut Down (not Restart), at a specific time, or a number of times during a period of the day. This last scheduling option allows you to simulate the continuous backup of AutoBack. For example, you can configure

Backmatic to backup eight times between 9:00 am and 5:00 pm and it will do an hourly incremental backup, or as close as is possible. As mentioned above, I really like the ability to specify exactly which files and folders to back up. Finally, Backmatic can take a prioritized list of volumes as the back up targets; thus if one server is not available the backup process will not be interrupted, very handy when using multiple R45's for daily backups. Two problems with Backmatic made it significantly less useful. First, it was not able to complete a compressed backup using DiskDoubler if any of the files had been compressed with Stuffit. This is a DiskDoubler problem, but Backmatic should simply not send SIT files to DD for compression; they are already compressed. Second, when attempting to compress a large (50MB) file to a 45MB disk, I was informed that there was not enough room on the disk. I know that when compressed the file only takes up about 14MB. The programmers at Magic Software said they would make a fix for these problems and send it out. Later, they said that they were about to put out version 2.1, fixing all problems mentioned and improving the user interface. I have not seen the new version as of this writing in early June '92, but the new version should be available by the time you this.

Norton BackUp has the best scheduling abilities of the programs I reviewed. You can set up as many different "Backup events" as needed. Each one can be for any time and day. They can be set to happen once only, hourly, daily, weekly or monthly. Each event also has its own set of files and folders to backup. Norton BackUp is the only program evaluated that can be set up to perform a complete (rather than incremental) backup every time. This is useful when backing up onto several different removable cartridges such as Syquest disks, one for each day of the week. However, I do not like the fact that Norton BackUp uses its own compression format, and I am unable to look through the files on the backup disk. The other problem is that the compression used is not nearly as good as can be achieved with DiskDoubler or Stuffit Deluxe. A final plus of using Norton BackUp is that when you buy it you also get the entire Norton Utilities suite, including disk optimization, file undelete and hard disk recovery.

#ENDCARD

#CARD

Chapter 3...

MultiClip

We use CompuServe a lot, signing on roughly daily or every other day. For efficiency we use Navigator, one of the automated session programs that you setup with your e-mail and files or topics you're interested in, and then run it automatically at night. This is very handy, keeps us in contact with a lot of people for technical support and other purpose, and very importantly, keeps our phone bills and

connect time charges low because the session is completely automated. It signs on, does its thing, and signs off in a minimum of time. This leaves us with a stack of e-mail and messages to read and respond to in the morning. Going through the messages on a daily basis has really shown up the weakness of the Macintosh Clipboard. The problem? There is just one clipboard. Sure, you can use the Scrapbook, but that is awkward and requires flipping through it to find what you want. We thought, wouldn't it be neat if we could assign clipboards to function keys, or option keys? Or better yet, have a popup menu of clipboards? Well, it turns out that such a beast does exist, and it does the job quite admirably with most applications. The product is MultiClip from Olduvia Corp. MultiClip is a desk accessory that gives you a lot of clipboards just a command key combination away. MultiClip is very easy to configure and use (as usual, we skipped the manual until later) and gives you stackable clipboards, in both forward and reverse order (copy a bunch of things individually, and then paste them individually), as well as nameable clipboards. The latter is our favorite although the stack of clipboards is also very handy when collection a number of elements from one document and moving them to another. The nameable clipboards work like a clipboard and scrapbook combined with the addition that you can name the elements, and you can easily and quickly access any of them from a open file dialog or a popup menu. Very, very handy! The down side? It doesn't always work with Navigator because Navigator uses a private clipboard and MultiClip is not always able to intercept the clipboard. Even without MultiClip running, Navigator sometimes has problems handling its own clipboard so the bug lies in Navigator. MultiClip works flawlessly with other programs we tried it with. Furthermore, Oldivia, the publishers of MultiClip, are aware of the problem and hope to have a fix available in the fall. If you ever found the standard Mac clipboard wanting then you should look at this nifty little program.

#ENDCARD

#TAG C3S3P2.pct

#CARD

Chapter 3...

### Speaking of Speech

We have been working for some time now on designing an interactive phone response system for BlackLightning to help handle the large volume of calls we receive and can answer people's questions more quickly. Through the fall and winter we solicited comments from customers on what they would like to see in the system, and what they would like to not see. The overwhelming response was: 1) go for it, the 24 hour access and quicker answers to questions would be a big boon; 2) always have a way to get to a person during business hours, even if you have to hold; 3) never

have too many choices or depth of menus so it doesn't get too confusing. Well, the first version is up and running. If you've called us recently you may have met Marvin, as we call the system. Marvin handles the overflow of calls when we're on the line and people seem to like him. He can answer basic questions about products and prices as well as taking a message, and of course, managing the hold queue so that the first caller in the queue rings to the next available person. Of course, as suggested, at any time you can press 0 to get to a person during business hours. 8 is dedicated to a help message that explains how to use the system. After two weeks on the job we give Marvin a B+ in his current abilities. What he does do, he seems to handle well. One of his deficiencies is that currently he only understands touch tones. We plan to add the capability to handle rotary responses by fall, and eventually voice recognition. Later he will be able to access our company database so you will be able to call in 24 hours a day, get product information, check product availability, place orders, and check order and payment status using a password. Over the coming year we will be further improving him and solicit your comments on this. Marvin's job is to serve you in the best possible manner. Write us with your comments or let us know what you like and dislike when you speak with us next.

What is Marvin? He's a Magitronic 386DX 40MHz PC from Front Porch Computers of Chatsworth, GA with two Rhetorex RDSP 9432 four port voice processing boards. We used the C-like VOS language from Parity Software to develop the programs that control Marvin and let him answer the phone, greet you, and respond to touch tones. Marvin uses a Panasonic KXT-61610 telephone key system unit to handle the switching of telephone extensions. If your interested in this type of system we would suggest reading as much as you can. Start with the magazines Voice Processing (1-800-777-4442) and TeleConnect (1-800-999-0345). Both are very informative. As to support from the above companies? Front Porch Computer is great. They offer on-line support (CompuServe) and have an 800#. Very helpful and knowledgeable. Parity Software is okay. They have their own, very limited BBS, and no 800# but seem competent. Rhetorex gets fantastic marks for product quality, but their manuals are atrocious. We are seasoned computer programmers (15 years) and we found their manuals to be less than complete and rather confusing. They are in the process of rewriting them so this should improve. The Panasonic KXT is well designed, powerful, and the manuals and unit are easy to use. They get high marks. As Marvin continues to develop we'll keep you informed...

Questions, ideas, computer tips, software or hardware products you would like to know about... Write to:

The ComputerPhile On CompuServe: [73130, 1734]  
c/o BlackLightning, Inc.  
Riddle Pond Road  
West Topsham, VT 05086



## Duplex Living

Although they are available, most of us don't have double sided laser printers or copiers but still need to print in duplex mode from time to time, whether it is to save paper, or to produce a publication that has a more professional look. A 'single-sided' laser printer or copier can print double sided, but there are a couple of problems to be overcome. The first is paper jams. When the paper goes through multiple times it can begin to curl and is more likely to jam. Fortunately, we rarely experience jams on the second pass. Usually it is the fourth, fifth or sixth pass where jams become markedly more frequent. This isn't usually a problem unless you're doing multiple colors and multiple sides, for example, with a short run brochure. Jams are worse in high humidity weather.

Some tricks to avoid the jams are, keep the paper dry, and wrapped or boxed until it is to be used. Store it on a flat surface face down beneath a heavy flat object, I use a piece of granite, between passes to minimize the curl and restore flatness. Keep your laser printer clean and in good repair. Change the ozone filter on time. Keep the machine cool and in as dust free an environment as possible.

One trick I use when duplex printing a document from a program that won't let me print just the odd or even pages is to print the whole document, and then switch every other page, put the pages back in the paper tray other side up, and print again. Now page one will print on the back of page two, two on the back of one, three on the back of ...

Where, Oh, Where....

...Is that EP-L wand? Nowhere! LX laser printers (EP-L), such as the HPIIP, do not use a fuser wand. So, in the instructions for return shipping when told "do not forget to enclose the fuser wand", EP-L users can forget it.

## Sources

Be sure to tell them you read about it in the Flash Compendium.  
Use the Reader Response Card to easily get more information.

AutoBack [Macintosh Backup]

TerraNetics

2773 Westshire Drive

Los Angeles, CA 90068-1929

(818) 446-7692

(818) 574-5028 Fax

Reader Responds Number 32

AutoDoubler [Macintosh Compression]

Salient Software, Inc.  
124 University Ave, Suite 300  
Palo Alto, CA 94301  
(415) 321-5375  
(415) 321-5578  
Reader Response Number 33

Backmatic [Macintosh Backup]  
Magic Software  
2239 Franklin St  
Bellevue, NE 68005  
1-800-342-6243 or (402) 291-0670  
(402) 291-1211  
Reader Response Number 34

KXT-61610 [Phone System KSU]  
Panasonic  
50 Meadowlands Parkway  
Secaucus, NJ 07094  
(201) 348-7000  
Reader Response Number 35

Magitronic 386DX/40 [PC Clone]  
Front Porch Computers  
Rt 2, Box 2178  
Chatsworth, GA 30705  
1-800-467-6724  
(404) 695-1990 Fax  
Reader Response Number 36

MoreDiskSpace [Macintosh Backup]  
Alysis Software Corporation  
1231 31st Avenue  
San Francisco, CA 94122  
(415) 566-2263  
(415) 566-9692 Fax  
Reader Response Number 37

MultiClip [Macintosh DA]  
Olduvai Corp.  
7520 Red Road, Suite #A  
South Miami, FL 33143  
1-800-548-5151 or (305) 665-4664  
(305) 665-0671 FAX  
Reader Response Number 38

Norton BackUp [Macintosh Backup]  
Symantec

10201 Torre Ave  
Cupertino, CA 95014-9854  
1-800-441-7234  
(408) 255-3344  
Reader Response Number 39

RDSP 9432 [PC Voice/Phone Board]  
Rhetorex  
200 E. Hacienda Ave  
Campbell, CA 95008  
(408) 370-0881  
(408) 370-1171 Fax  
Reader Response Number 40

SnapBack [Macintosh Backup]  
Golden Triangle Computers, Inc.  
4849 Ronson Ct  
San Diego, CA 92111  
(519) 279-2100  
(619) 279-1069 Fax  
Reader Response Number 41

VOS [PC Voice Operating System]  
Parity Software  
25 Stillman Street, Suite 106  
San Francisco, CA 94107  
(415) 931-8221  
(415) 546-7329 Fax  
Reader Response Number 42

To use the Reader Response Numbers (RR#) circle the RR# on the enclosed Reader Response Card and mail it to The Flash, Riddle Pond Road, West Topsham, VT 05086 or fax it to us at (802) 439-6463.

#ENDCARD  
#TAG C3S4P1.pct  
#CARD  
Chapter 4

TheComputerPhile  
By John & Walter Jeffries  
Each issue the ComputerPhile answers questions and examines hardware and software you have asked about. This time we'll look at Ethernet networking, an in-ear phone headset and an environmental monitoring system for your computer.  
While contemplating the Ethernet options for our network at BlackLightning, we looked through many computer magazines and found that they were filled with articles that tried to compare all the

Ethernet solutions under the sun to determine which is the best performer and the best buy for the money. This is very helpful, and anyone looking into changing their network should search the back issues of their favorite computer journal for at least one such article. However, none of the articles discuss what it is like to purchase and install the network. These are excerpts from our travel log of this adventure down the Ethernet Highway.

Why use Ethernet?

Ethernet is a collection of specifications about the hardware needed and the signals used to put together a fast network of computers. There are quite a few companies that manufacture hardware and software following these specifications. You can buy from just one of these companies, or you can mix and match, putting together the best system for your network. Conceived at Xerox more than twenty years ago, the Ethernet allows for a large number of nodes (computers, printers) on each network; long networks (Thick Ethernet can be as long as 500m or 1600ft); and high speeds. The speed usually associated with Ethernet is 10 megabits per second, however the protocols and network traffic will slow things down in a normal network environment.

There are a few disadvantages to Ethernet; it is certainly not for every situation. You can expect to purchase new cabling and have to lay that throughout the office. The hardware to connect each computer to the Ethernet cable must be purchased, as very few computers are sold with this hardware included. Finally not everyone needs the speed and larger network capabilities of Ethernet. If there are just one or two computers and a printer on the network, and you do not need to pass large files back and forth very often, then stick with something less expensive like LocalTalk, the networking hardware built into the Macintosh.

Choosing the hardware

Because we were planning to connect mostly Macintosh computers to our new network, we looked in MacUser and MacWorld for their in depth articles comparing all the major players in the Ethernet game. Through this research we found that performance varied only slightly from one manufacturer to the next when the hardware was connected to the same computers. This is probably because the specifications are what determine the level of performance and they are all working with the same specifications: Ethernet.

Since performance did not differentiate the manufacturers, we looked at other factors to pick the one for us. These factors included the warrantee offered by the manufacturer, the reputation of the manufacturer, the cabling supported, the range of products offered, the age of the manufacturer, and the price of the hardware. We decided we would use thin Ethernet cabling for its low cost and simple installation procedures, so we looked for a manufacturer that supported this cable option in all their hardware. Purchasing all the hardware from one manufacturer kept the support simple and

ensured compatibility between the various cards and boxes. We decided to go with Compatible Systems.

So what cards and boxes are needed?

This will vary from one installation to the next; but the basics are a box or card for each computer, a router to connect the Ethernet network to another network, a 10BASE-T hub if you plan to use twisted pair cabling, and a box to make the non-Ethernet printers available on the Ethernet.

Because there are very few desktop computers that have Ethernet hardware on the motherboard, it must be added. If the computer is one that can accept cards installed inside it then there is almost certainly a card available with the necessary hardware to connect to the Ethernet network; this is both the cheapest solution and usually yields the fastest connection. The second option is to buy a separate box that connects to both the network and the parallel or SCSI port on the back of the computer. In our case we needed to connect a Mac IIci and two Mac Pluses directly to the Ethernet, so we got one card and two SCSI to Ethernet boxes.

Due to the expense of Ethernet you may decide initially to connect only some of your computers. Ethernet is also a good solution for connecting two or more separate networks that are too far apart to connect with another network technology. In this case a router is needed to connect the original network to the new Ethernet network. In our case we have several machines that we did not want put on the Ethernet immediately. For this we got an Ethernet to LocalTalk router that has one Ethernet port and two LocalTalk ports. This allowed us to divide the old network into three "zones" (Production, R&D, and Sales). Now all the sales computers are on the Ethernet and can access the database server much faster while each computer still has access to all the other computers. An unanticipated plus to this situation is that the traffic on the Production zone does not slow down the R&D or Sales zones. Having three zones on our small network has complicated our lives just a little: we have to take one more step to access a computer or printer in another zone. It would be nice if there were a way to make the software group a set of zones together and treat them as one entity, even though they are separate.

The next piece of hardware you may need is a hub. You will only need this if you plan to use the 10BASE-T Ethernet standard. A hub is the central device in the Star Topology that directs the signals from one node to the next. One computer, printer or another hub is connected to each port on the hub. There is usually a Thinnet or Thicknet connection as well for plugging into the main network. Hubs come configured for as few as four to as many as twenty-four devices and range in price from \$300 to \$3000. The advantage to the star topology required by 10BASE-T is that if a cable is broken somehow, it only cuts off one computer; the rest of the network will be unaffected. In the linear daisy-chain used with the other cable

options, a cable break means the network is divided into two networks at best; or shut down completely in the worst case. A second advantage of 10BASE-T is that you can sometimes use the phonewire already installed in your office for the connection. Finally, it is possible to place a printer that does not have an Ethernet connection directly on the Ethernet. We have a laser printer in the sales department that we did not want to leave in either the R&D or the Production zones. We put it directly on the Ethernet with a device called an Ether•Write from Compatible Systems. This is similar to the “SCSI to Ethernet boxes” for the Mac Pluses, except that the connection is through the LocalTalk connector and it can support up to six printer type devices. This means that the laser printer looks like it is on the Ethernet, however communication with it is not much faster than normal because of that last few feet of LocalTalk cabling. This is the hardware that you can probably most easily do without, but we wanted to see how it compared to the router in function. If you only need to put a few printers on the network then the Ether•Write is about half as expensive as a router and can connect as many as six printers to the network.

There are three types of cable to choose from, and each has its advantages and disadvantages. While Thick Ethernet is the most expensive cable and the most difficult to install. It is also capable of supporting the greatest distances (up to 500 meters) and the least susceptible to outside interference. Thicknet is a good choice for connecting networks between buildings or connecting to an existing thick network. Most new installations will choose one of the next two cable types.

10BASE-T is at the other end of the spectrum. The cables cannot be greater than 100m, but it is just cheap, four wire, phone cable and making your own cable segments is very simple. 10BASE-T is used in many new installations because it is relatively inexpensive and, due to the star topology used, network management is simplified. There is one drawback: you must lay a cable from each of the devices on the network (computers, printers, etc.) directly back to a port on the hub and you must spend the extra money on a hub. In many newer office buildings, this may not be a problem because there may be extra cables already installed, but in older buildings this could amount to a lot of cables.

Thin Ethernet (10BASE-2) is the cabling that we chose. It supports longer networks than 10BASE-T (185 meters) and is less susceptible to outside interference, yet it is much less expensive and easier to install than Thicknet. Given the fact that we did not have to purchase a hub, its price per node is competitive with that of 10BASE-T. If you do not feel comfortable using wire strippers and a cable crimping tool then you should probably purchase the cables all made up in segments, with the male connectors already attached. This way you will only have to run the cable from one computer to the next and connect them together. If, on the other hand, you have made

your own phone cables before and would like to save a little more on the price of installing your network, then you might consider buying a few hundred feet of cable and making the segments yourself. One big advantage to doing it this way is that you can change your mind on the exact path and length of cable right up to the very last moment without wasting any cable. Also, as long as you feel comfortable with your work, you know that the connectors were installed right. Finally, it is easy to add or move a node at any time when you have the cable on hand and can make up a new segment on demand.

Before you get the cable, you will need to get a idea of how much is needed. If you are going to make your own segments, then you only need to make a rough estimate and add 10% for error. If you are going to have the segments made. use a floor plan to figure the exact route for each segment. Allow extra length (about five feet) on each cable segment, just in case you have measured a distance wrong or something unexpected comes up.

With the cable and the necessary hardware in hand, you are ready to install the network. After planning where each computer would be and the approximate route for the cable through the building, we simply started at one end of the network and began laying the cable. After connecting the first two computers, we tested each new connection to make sure that it worked and did not cause any problems with the previously installed cables. When testing, be sure to put a terminator on each end of the network. Thus, one terminator stays at the beginning of the network and one gets moved from one device to the next as you finish laying each section of the cable.

[Picture 1]

After using the new Ethernet network for three months, we have only encountered one serious problem. Our Xante accelerated LaserWriter Plus does not seem to be responding quite fast enough to make it through the router and back to the computer in time. When we try to print a large file from one of the computers on the Ethernet to the Accel-A-Writer (which sits on a LocalTalk zone behind our router), we occasionally get a Time Out error. We called both Compatible Systems and Xante technical support about this problem. Both companies were courteous and helpful, but they did not know what was wrong. They assured us they would look into the problem. After several more calls, it turned out that the ROMs on our Accel-A-Writer are known to have problems with routed networks. We got this information through the tech support people at Compatible Systems. It would have been nice if the Xante people had informed us during one of our calls. We expect to receive new ROMs for our printer in a few days, but after we go to press. All in all the support from Compatible Systems was excellent and from Xante it was good.

With a bit of research, the right hardware and some hands on work, we made it onto the Ethernet Highway. Except for the occasional

pothole, it's been smooth sailing, at a refreshingly accelerated pace

#### Neat Stuff Category

Computers are becoming more and more integrated into our businesses, our homes, and our lives. As they become smaller and faster, they are showing up in more and more unusual places. We couldn't run BlackLightning without computers. In fact, we figure that to do everything by hand, we would need 35 more employees along with their desks, offices, lights, and 175 additional large, two draw, file cabinets. Not only would that be unprofitable, forcing us to raise prices and cut R&D, but it would be damaging to the environment. As it is, we have a close to paperless office. We generate very little paper for internal use. Almost all the printing we do in our offices is for communicating with "the outside world", and that is also decreasing with more electronic mail and direct computer to computer faxing. Internal files are all stored on the computer. Maybe the 90's will finally be the decade of the much heralded paperless office.

#### Ear-y News

There are some neat new products coming up on the technological horizon that will help bring us closer to that efficient, paperless office. Norris Communications of Poway, California, is introducing an in-ear headset for telephones. The unique feature of the Norris Ear Phone is that it will use bone conduction to pickup your voice when you speak. Soon they will be using radio to send the signal to your base phone. This means no more awkward headset wrapped over your head, tangling in your earrings, your hair, and around your neck; no mike boom knocking you in the cheek; no background noise picked up by the mike; and no more cable connecting you to the phone so you'll be free to get up and walk around. Eventually, Norris even plans to add voice recognition to the earphone: you may be able to say "dial 555-1212" and the phone will dial automatically; this could even allow you to ask questions of your computer. Jennifer Blome at Norris told me they expect to have several units, each with a different power level for the radio signal. Some will extend up to 1,000'(!) for campus wide reception. Others will trade some of that range for improved battery life. What I would really like to see is a digital unit like the newer portable phones that seek the clearest channel and then automatically adjust the power level as necessary. Such that when you're around the office it uses the minimum power, and as you move further away it boosts the signal to give you more range. Finally, you won't be tied to your desk, and your hands will be free to do real work, like writing, data entry, record checking on your computer, etc. Hot product! This is going to be MAJOR boon to telephone users in the information age! We'll be watching developments closely!

+++++++ Continued on next card +++++++

#ENDCARD

#TAG



#CARD

Chapter 4...

+++++ Continued from previous card +++++

### Add 5 Senses To Your Computer

With a system like Marvin, our computer phone attendant, your computer can talk to the phones and thus to the world. Add the Norris EarPhone and you're always in touch with your computer, but what about sensing what's going on in the building or even the room it's in? Up until recently, in both the PC and Mac worlds there wasn't much available to connect your computer to environmental sensors. Remote Measurement Systems of Seattle, Washington, has just the trick – ADC-1. The ADC-1 connects to your Mac or PC via the serial port. You can then connect up to 16 analog inputs (including temperature, light, sound, & humidity sensors) and four digital inputs (like open door sensors), six output controls, and BSR X-10 control (the widely used light & appliance control standard that works over your installed electrical power lines). Inside the box are analog to digital circuits that translate real world data (like the temperature) to digital, computer world, data. This means you can turn your computer into a data collector and make it react to what's happening. For instance, in a business, you might have the computer listen to sounds at night and monitor the building with door sensors and heat sensors. If it senses an intruder or a fire then it can take appropriate action: sound an alarm; turn on lights; or call the fire department, the police, or you and deliver a pre-recorded message. You could also set it up in your home to turn on lights, water plants, and do other simple tasks while you're away. In a greenhouse it might monitor plant conditions and adjust the water, fertilizer, ventilation and the lighting accordingly.

We had built a new case for some computer equipment and used the ADC-1 to collect temperature and power consumption data every 30 seconds for a week. Using RMS's software we set the ADC-1 and Macintosh Plus to compare the interior case and power supply temperatures to the ambient room temperature. If they exceeded 82°F the Macintosh said, using the Mac's built in speaker, "Temperature exceeded for <sensor>". It also logged the data to text file that we later opened with Excel and graphed. This allowed us to run the test case for days and collect many data points, and at the same time we were able to react if the system overheated to a critical point. Since we didn't have to personally monitor the system all the time, we were freed up to do other projects while the Macintosh and ADC-1 ran the tests. We always feel it's a waste to tie up human intelligence on simple minded tasks like test monitoring when computers can do the work so much better.

The only problem we had with the ADC-1 software was during setup. It bombed if command period was pressed and froze one or two

other times. But, once the program was running, collecting data, controlling lights and such we had no problem. Even when it ran continuously for over a week.

The manual for the ADC-1 is very comprehensive and well organized. If you're not a programmer, then you can easily use RMS's supplied software to control the unit, set actions to be taken when critical points are sensed, and log the data to a file for review with a wordprocessor, or better yet, a spreadsheet program like Lotus 1-2-3 or Excel. If you're into programming, even just a little bit, then this one's for you! Included in the manual are in-depth discussions about computer basics, programming considerations, trouble shooting, serial port (RS-232) communications, and programming examples for the IBM-PC, Apple Macintosh, Amiga, Apple IIe, Atari, Commodore, HP-71, and other computers, PLUS, a full technical reference. Easy to use for the casual user, and a true hacker heaven! The product's well built, the software works with few glitches, and the manual is very well written. If you need to have your computer sense and record environmental or equipment data, respond to this data, or control the outside world, check out the ADC-1 from Remote Measurement Systems.

#### Sources

##### Ethernet Hardware

Compatible Systems Corporation

4730 Walnut, Suite 102

PO Box 17220

Boulder, CO 80308

(303) 444-9532

Reader Response Number 4

##### Norris Ear Phone

Norris Communications Corporation

12800 Brookprinter Place

Poway, CA 92064

(619) 679-1504 Voice

(619) 486-3471 Fax

Reader Response Number 12

##### ADC-1

Remote Measurement Systems

2633 Eastlake Avenue East

Seattle, WA 98102

(206) 328-2255 Voice

(206) 328-1787 Fax

Reader Response Number 8

Send questions and products for review to:

The ComputerPhile

c/o BlackLightning, Inc.

Riddle Pond Road

West Topsham, VT 05086

Evaluation units are returned at the editor's discretion.

### Cable Making

Making your own cable segments is not as difficult as it may seem. It is important to use the right tools and materials, and to observe the guidelines on the maximum and minimum length of any one segment. We ordered all of our parts from MicroComputer Cable Co, (313) 946-9700. Our shopping list for Thinnet included: (part # in parentheses)

- Cable stripper capable of stripping 18 gauge,
- Crimping tool (MC864): Crimps .068 inch for the center pin and .213 inch for outer shielding,
- Coaxial cable RG58/U (MCCX-58),
- Male BNC crimp-on connectors (MCBC-RG58),
- A BNC T-connector for each device (MC845),
- Two fifty ohm (50W) terminators (MC846): one for each end of the network.

Each section of Thinnet cable must be at least half a meter long and the network cannot exceed 185m. When making your own cabling, it is easiest to run the cable first and then install the connectors as the last thing you do before plugging each device into the network. To make a Thinnet cable:

1. Slide the silver cylinder that came with the male connector onto the cable.
2. Strip the black outer insulation back about 1/4" longer than the shank of the male connector: about 1/2".
3. Fold the braided shielding wire back over the black insulation to get it out of the way.
4. Strip the insulation off the center wire with the stripping tool. Expose about 1/8".
5. Slide the gold center pin from the male connector over the center wire and crimp it on with the .068" hex on the crimping tool.
6. Slide the male connector over the pin and press it on tight. Make sure you will not need to pull this off for any reason. When it is on right the male connector grabs the center pin and will break it if you pull too hard.
7. Trim the braid back about 1/4" to just cover the knurled male connector shank.
8. Slide the silver cylinder up to the connector. For the most professional job, make sure that none of the braid sticks out between the male connector and the cylinder.
9. Crimp the cylinder onto the connector with the .213" hex on the crimping tool.
10. Check continuity between the connectors on each new cable segment. There should be almost no resistance between the two center pins as well as between the outsides of the connectors. There should be no connection between the outside and the center pins.

## Terminology

10BASE-2 - Ethernet using a relatively thin coaxial cable.

10BASE-5 - Ethernet using a relatively thick coaxial cable.

10BASE-T - Ethernet using a four conductor, unshielded, twisted pair cable (phone cable).

Daisychain - Physical layout used in Thin- and Thicknet networks. A cable runs from one device to the next with no central dispatching device.

Ethernet - Specification of the hardware and electrical signals used to connect computers.

Hub - The central device in the star topology of a 10BASE-T network.

Network - A collection of hardware and software used to connect computers to share files, printers and other devices.

Router - A device used to connect two different networks, such as Ethernet and LocalTalk or two Ethernet networks.

Thicknet (10BASE-5) - The cable specified for Ethernet using a relatively thick coaxial cable.

Thinnet (10BASE-2) - The cable specified for Ethernet using a relatively thin coaxial cable.

Star Topology - Physical layout used in a 10BASE-T network. A cable runs from each network device to the central hub, which routes the signals.

## Cover to Cover

When creating our Compendium mock ups, we found we lacked any heavy weight cover stock to make the cover and the cover was larger than a sheet of paper that would go through the laser printer. With a little glue, our t-shirt heat press, and some ingenuity we came up with an excellent work around. On the laser printer, we printed a copy of the Flash Compendium cover on two pages (using turquoise and black toners) on Laser Plus paper. We used Uhu glue sticks to join the covers and layer several pieces of paper to the back of this printed cover. We then pressed the whole thing in our cold heat press for about an hour and trimmed it in a paper cutter. What we got looks and feels like paperback cover stock!

## Prime Time

After printing 5 to 10 solid black pages, your cartridge will print blacker blacks. This process primes the cartridge drum, causing a stronger, more even layer of static electrical charge to be layed out on the surface of the drum, thus pulling more toner from the reservoir allowing the cartridge to print at its very best.

#ENDCARD

#CARD

Chapter 4...

## Transfer Secrets

Transfer Toner, one of the most exciting laser printer supplies available today, lets you produce real three dimensional products in full color with a common, black & white laser printer. Things like T-shirts, hats, ceramic mugs, trophies, plaques, vinyl signs, banners, buttons, mouse pads, and more. Desktop Silkscreening has opened up a whole new world to people who previously couldn't afford to create these products. Transfer Secrets is a collection of tips and techniques for using Transfer Toner.

#ENDCARD

#TAG C4S1P1.pct

#CARD

Chapter 4...

Commonly Asked Transfer Questions:

Will it hurt my laser printer? No, Transfer Toner, like regular toner, when properly used will not hurt you, your laser printer, or anything else.

Can I do multi-color transfers? Yes! Simply refeed the same sheet of paper several times, each time with a different color transfer cartridge, to get multiple colors. You can mix colors to get ones you don't have. Registration of a well maintained, clean laser printer is excellent. You can even do Photos!

Do I need special paper? No, you should use regular printer/copier paper to make transfers.

Can I use an iron to transfer? Yes, most household irons will give you a reasonably good transfer for t-shirts. If you do a lot of transfers you will want a heat press.

What if I don't have a laser printer? You can send us your design and we'll transfer it for you. See Transfer Services on page 54.

Why are the felts thicker? Thicker transfer felts are specially made for BlackLightning to our specs to help better clean the fuser rollers in laser printers used with transfer toner cartridges. The extra thickness does a better job of cleaning the residual toner on the upper fuser roller.

What is the TransClean for? Transclean is a gentle solvent that dissolves toner. Use it to quickly and easily remove toner residue from transparencies, metals, vinyls, and ceramics you have transferred to.

What temp and time do I use? In general, the best temperature for doing transfers is 400°F. The time varies from about 10 to 120 seconds. Each material has a different optimal temperature. For more information see page 32 for the Flash Compendium 1992 book

which has a complete chart of temperatures, times, and materials. Where can I find more information? Read pages 52-53 of this Flash and the Transfer Secrets column on page 13. Get the Flash Compendium (page 34) which has all the best articles from the back issues of The Flash. You can get a Transfer Sample Kit (page 53) of a mug or t-shirt with an explanation of how it was done and a transferred brass rebate medallion worth up to \$10. If you would like paper transfer samples to try yourself, simply send a self-addressed stamped envelope to: Paper Samples, BlackLightning, Riddle Pond Road, West Topsham, VT 05086.

## Fax Tricks

When preparing a page for faxing, write the destination fax number upside down on the bottom of the back of the first sheet. Then, when you place the paper in the fax it is easy to see the number and dial even if you have to put the papers in the input tray before you can dial, as some fax machines require.

#ENDCARD

#TAG

#CARD

Chapter 4...

Material	Prep Spray	Temp	Time	Pressure	Cleaning	
Fabrics 100% Polyester	No	425°F	20s	Light	None	H
White 50/50 Cotton/Polyester	2 light coats	400°F	30s	Light	None	H
Color 50/50 Cotton/Polyester	No	400°F	30s	Light	None	W
100% Cotton	3 or 4 coats	375°F	45s	Medium	None	C
Hats 100% Polyester fronts	No	425°F	10s	Light	None	F
Metals BlackLightning Premium	No	425°F	20s	Firm	Peel	R
High Quality Coated Brass	No	425°F	30s	Firm	TransClean	P
Other Sublimation Aluminum	Maybe	425°F	60s	Hard	TransClean	P
Other Metals	Yes	425°F	60s	Hard	TransClean	P
Vinyl Placemats, stickup signs	Preclean	325°F	10s	Light	TransClean	N
Mouse Pads 100% Polyester top	No	425°F	20s	Light	None	N
Mugs Precoated	No	500°F	120s	Hard	TransClean	D
Uncoated	Yes	500°F	120s	Hard	TransClean	S
PVC Flat sign boards	Preclean	325°F	10s	Light	TransClean	N

Use appropriate prep sprays - Fabric or Metal/Ceramic - Read directions very carefully and follow to a tee.  
Cleaning refers to cleaning material surface after transferring to

remove any residual toner to expose colorful dyes.

All cleaning should be done with TransClean after material has completely cooled to room temperature. Otherwise you may remove the dyes as well as the carrier toner. Using other solvents such as acetone may remove the dyes, lightening the image.

Results may vary with conditions, time, temperature, pressure, heat press, and materials. Always test on a scrap.

Transfer Techniques & Materials from the BlackLightning Flash

Compendium 1992

#ENDCARD

#TAG C4S2P1.pct

#CARD

Chapter 4...

Getting Transferred

by Walter Vose Jeffries of BlackLightning  
from The Flash volume 1, issue 2

In July of 1989, BlackLightning introduced a radically new type of toner to the laser printer market: Iron-On Transfer Toner. We began shipping blue in the beginning of August, and the response has been overwhelming! We are now shipping twelve colors with an improved formulation and continue to make advances. We have received a tremendous amount of positive feedback on the transfer toner. This article will give you a little background and pass along some discoveries that people shared with us in the four months after Transfer Toner was introduced.

The sublimation process has been used for years in the clothing industry to transfer images to fabric, and in the trophy business to create inexpensive, quality plaques. A number of vendors offer systems based on copier technology that allow people to photocopy an image and produce a transfer that can easily be transferred to fabrics and coated metal surfaces with a heat press. The problems with these systems are that they typically have significant amounts of background spotting due to the copier technology, are more expensive, and more importantly lack the powerful typesetting capabilities of a computer and laser printer system.

When Apple Computer introduced their Macintosh Computer, and then the LaserWriter in 1985, many vendors of sportswear, trophies, and T-shirts turned to it to augment their existing copier-based systems, giving them the power of computer graphics and typesetting. Yet, they were still dependent on the older systems. The output from their laser printer needed to be transformed into an iron-on transfer since laser printer toners only came in black without the necessary embedded fabric dyes.

BlackLightning's iron-on transfer toner cartridges solve this and are compatible with the popular Apple LaserWriter family, Hewlett-Packard LaserJet series of laser printers, and most other laser printers. With these cartridges the older, troublesome copier systems can be fully replaced with the power of desktop publishing and today's computer typesetting. This also replaces the expensive transfers based on specially coated papers, because BlackLightning Transfer Cartridges print on plain paper.

Multi-color, multi-pass printing is easy to do with the BlackLightning Transfer Cartridges, as all of the toner components are completely contained within the cartridge, and cartridges can be easily and rapidly changed. Using the blue (cyan), magenta, yellow, and black cartridges you can even do four color process work to produce color photographs!

The BlackLightning technology involves embedding special, expensive sublimation dyes used in the fabric industry, into the toner during the manufacturing process. The toner acts as a carrying agent for the dye, and is not transferred to the final product surface for the most part. The color comes from the dye, not the toner. The result is an image that looks black on the paper (plain paper is used) and shows its colors when transferred. When the transfer is heated to 400°F the dye sublimates, changes from a solid to a gaseous form, and moves to the new surface. The dye bonds to polyester molecules in the new surface, producing the color. This process takes between 15 and 45 seconds, and produces color images fully washable in hot or cold water, even with bleach. It can be used with any surface containing polyester including fabrics, coated metals, painted surfaces, PC circuit boards, and coated ceramics.

Because of the high cost of the necessary dye BlackLightning offers two lines of transfer cartridges: Professional and Economy. The only differences between these are the amounts of toner, the resulting copies produced, and cost per page. The Professional prints ~2,200 pages, depending on coverage, and the low cost Economy prints 400 pages. Transfers are no longer solely the domain of large T-shirt houses. Now anyone with a compatible laser printer can make their own shirts, mugs, hats, trophies, and so much more!

### Equipment

A laser printer with a Canon based print engine is the basic hardware needed to produce transfers. This includes laser printers from manufacturers such as Apple, Hewlett-Packard, QMS, Canon, and many others. You will also need a computer, such as the Apple Macintosh or an IBM compatible, to control the laser printer. To transfer your images you will need a household iron or better yet, a T-shirt press or similar equipment. Many people are finding scanners to be useful in getting existing artwork into the computer quickly.

### Software



A wide variety of software on the market is useful in helping you design your transfers. At BlackLightning, we use Adobe Illustrator and Adobe PhotoShop extensively. These packages' powerful drawing and color separation capabilities are ideal. Many customers find Dr. Halo, PC Paint, Corel Draw, and PhotoStyler to be very useful on IBM compatible computers. Most paint or drawing programs will do, and a word processor is all you need for simple typesetting. The key feature is being able to flip your image horizontally so that it will print in mirror-image. On a Macintosh, simply select Flip Horizontal in Page Setup Options.

#ENDCARD

#TAG C4S2P2.pct

#CARD

Chapter 4...

### Designing your graphics

The most important issue when designing your graphics is to consider the surface you will be transferring to. The resolution of your image is limited by the resolution of the destination material. If you are transferring to a metal or ceramic surface, or a very tightly woven fabric, small details and text will show up well. If you are transferring to a fabric with an open weave, you will need to have larger graphics to produce clear results. Don't transfer 9-point text onto a regular T-shirt, or it may be unreadable. When transferring to a smooth surface, expect the image to be very similar to what you get from the laser printer and when transferring to a coarse surface, you need bigger, bolder lines and images.

When transferring to fabrics, the range of screens or halftones that can be achieved on a laser printer may not show on the final transfer. You may not be able to differentiate between 5% and 15% screens, whereas you might be able to on a standard laser printed graphic.

Whether you start with a scan, do a drawing directly on the computer, or typeset a message, be sure to reverse the image before printing.

### Printing

Before you create your transfer, proof the image with a non-transfer cartridge to avoid wasting transfer toner. You may also wish to iron the transfer, done with transfer toner, onto a scrap of material before transferring to the final surface. We strongly recommend that you experiment before attempting your final product. You can use regular copy paper for your transfers. No expensive, special papers are needed with BlackLightning Transfer Toners.

When you are ready to print, load in the transfer cartridge of your choice and the fuser wand that came with it, and print a couple of copies of your image. The resulting image will appear grey or black

on the paper. The transfer will show its colors when you heat it. Change back to your regular cartridge and wand after you have printed. Because of the cartridge system used by Canon based laser printers, such as the Apple LaserWriters and HP LaserJets, you can easily swap cartridges and don't have to worry about residual toner being left in the machine and needing to be run out.

If you are printing images with a lot of coverage, you may need to change your fuser wand felts more frequently. Background streaking on the printed output indicates it may be time to change the felt. Transfer cartridges come with extra felts. Additional felts and wands can be purchased separately.

Printing single color transfers is all well and good, but it is the capability to print multi-color images directly from their laser printer that has many people excited. This can be done simply by passing the sheet of paper through the laser printer several times, on each pass using a different color transfer cartridge. Not only can you get several colors on a transfer, but you can also mix the colors to achieve entirely new colors, as Fredrick Ross, of Terminal Solutions in El Paso, Texas, discovered.

The biggest concern in multi-color/multi-pass printing is registration. We have found the Canon print engine to typically have a registration of better than one thirty-second of an inch, using autofeed from the paper tray when the machine is well maintained. Manual feed tends to slightly produce less accurate results. The first step is to prepare your image for color separation. Some programs, such as Adobe PhotoShop, have built-in color separation capabilities. With other programs you will need to prepare separate files for each color. The easiest way to do this is to create your drawing and save one copy with the extension .All on the name. Then selectively delete parts that should not show up for each additional color and save them with the extension .Blue, .Red, etc. If you had a picture of a purple cow, green fields, a blue sky, and a red barn you would need to save the files illustrated below.

#ENDCARD

#TAG

#CARD

Chapter 4...

Printing each of the files in turn, changing the appropriate color transfer toner cartridge, and reinserting your paper in the automatic paper feed tray for each pass, will give a five color transfer. The fourth color is purple (red & blue) and the fifth is black (red, green, & blue.)

Experiment with mixing colors and registration. Expect different sections of the page to register better than others. Try placing a black outline at the border where two colors meet to hide any misregistration. Mixing red and green will give brown, while red and yellow give orange. Play with it and write The Flash to share your

discoveries!

### Transferring

We'll cover transferring to fabrics here. Other surfaces are similar. As mentioned before, there must be polyester in the destination surface for the full brilliance of the colors to be revealed, and to assure washability. This eliminates pure cotton fabrics (we are working on a solution to this.) 50/50 cotton / polyester blends work well, although 100% polyester is ideal. Since no one likes to wear 100% polyester, the trick is to use 50/50 and prepare it with PrepSpray, a polyester solution, that you can spray onto the front or back of the shirt and thus increase the image brightness significantly. We have found that Screen Stars Best T-shirts are especially good. These 50/50 shirts have a tight weave that takes colors better than common undershirts.

If you are using a hand held steam iron be aware that the steam holes will be cooler than the iron and you must lift and move the iron during the transfer process to avoid having the steam holes show in the image.

Place half dozen sheets of paper inside the shirt to prevent the transfer from showing through on the opposite side. Smooth out your fabric and iron it flat to remove any wrinkles in the area you are transferring to. Place your transfer face down on the fabric and place another plain piece of paper over it to mask it and prevent the fabric from overheating. Customers have reported that a brown paper bag works well. We used unprinted newspaper. Press the image firmly for 15 to 45 seconds and remove the transfer to reveal your finished product!

Examine the transferred image. Is there spotting in the background? If so, turn the density setting on your laser printer down or try transferring for a shorter time. If the image is not dark enough, try turning the density setting up or transfer for a longer amount of time. If you get a haze in the background then you may want to try prepressing, that is press the transfer onto a scrap of fabric for about 7 seconds at 400°F. This will remove any haze but leave the main image with plenty of dye to transfer the next time. You'll find that many transfers can be reused a second time.

### Washing

Now that you have produced your beautiful work of art, you will may be wondering how to care for it properly to keep it from fading. Our field tests show Transfer Toner to be extremely resistant to fading on fabrics when properly applied, even after years of hot water & heavy bleach washings.

### Applications

When we first introduced the transfer toner, we were primarily thinking of T-shirt applications. Finally, the time has come when you can take your gorgeous computer graphics and transfer it to many

different materials. Since August, we have received literally thousands of responses from excited customers. People are using the transfer toner in ways we never imagined! While many of you are making up wild and crazy T-shirts, (and thanks to all of you who have sent in examples of your artwork already!) others are making mugs, plates, personalized baseball caps, the labeling on computer circuit boards, front panel displays for electronics hardware, trophies, plaques, leather appliques, designs for embroidery, craft patterns, stenciling on sheetrock, and many more creative applications. Several people have opened new businesses or expanded existing business utilizing the transfer toners and educators across the country are using the transfers in fundraisers. In fact, one gentleman bought his second and third transfer cartridges with the money he made selling the transfers from the first one! The possibilities are limited only by your imagination. Share your discoveries through The Flash, and by all means, be sure to enter the art contest on page 163!

#ENDCARD

#TAG C4S2P3.pct

#CARD

Chapter 4...

#### Cartridge Tabs

If you are getting light copy from a full PC or EP toner cartridge, try removing one or both tabs. If you are getting overly dark copy or backgrounding, try printing with both tabs inserted. Extra tabs can be found in unused or empty cartridges, or made with cardboard and scotch tape. EP-S works the same and must have at least one tab.

#ENDCARD

#TAG

#CARD

Chapter 4...

#### Tricks of the Trade

by Walter Vose Jeffries of BlackLightning  
from The Flash volume 3, issue 2

There are many little tricks of the trade that make transferring easier and help produce better finished products. Some of you have sent hints and tips that you have discovered. Others have called or written with questions. This article is a compilation of many of the techniques we have discovered ourselves or learned from you over the years. This is by no means a comprehensive list of methods. It

answers many common questions, and will get you thinking and experimenting. Write us with your tricks-of-the-trade!

This article is organized into six sections:

Technical Background - Sublimation toners

Equipment - Equipment & software

Printing - From the computer to paper

Transferring - Paper to finished product

Materials - What works and things to try

Other - Extras that make the difference

Product Ideas - Things you might try

#ENDCARD

#CARD

Chapter 4...

## Technical Background

What exactly does sublimation mean? Sublimation is the process of a solid changing to a gas without going through an intermediate liquid phase. In the winter, snow and ice sublime and disappear without melting to produce puddles. Dry ice also sublimates producing the mist often used in movies, plays, and science class demonstrations. What is sublimation in terms of transfers? During the initial stages of the manufacturing process, Transfer Toner has a special dye embedded in the toner particles. When you heat the transfer in your heat press, the dye vaporizes. The gas moves to the material and bonds to molecules in the surface producing color.

Why is the print black on the paper? The toner is black or dark grey on the paper, but it carries a dye that appears when you heat the transfer and press it to the T-shirt, cap, etc. Because the carrier toner is so dark, you can not easily see the color on the paper. With experience you may learn to see the tinge of color present in the toner by holding it up to a light.

Why is polyester content so important? The dyes that we use in Transfer Toner bond strongly to the polyester molecules, producing the most vibrant, long lasting colors. Greater percentages of polyester in a material produce brighter, longer lasting the images.

#ENDCARD

#CARD

Chapter 4...

## Equipment

What hardware do you use? We are Mac based, so what I tell you is oriented to the Macintosh. Much of the same work can be done on other types of computers such as IBM, Hewlett-Packard, and others. This answer is going to be a little technical; if you are not into computers, my suggestion is that you talk with a reputable dealer or

computer consultant.

I use two machines: a very portable Macintosh compatible Wallaby with a 4MB RAM disk, 4MB of system RAM, 16 MHz 68000 CPU, and a built in large screen; and a Macintosh Plus upgraded with a 25MHz Total Systems Gemini 68030 and 4MB of RAM. Both machines have hard disks (Wallaby: 40MB Prairie, Gemini: 140MB Rodime) and I have a 45MB Syquest removable from MicroTech for backup and transporting large files. I use a 2400 baud modem for communicating with our main office, and a Chinon based 200dpi scanner from Mirror Technologies for input. Printing is done on my old, but reliable, Apple LaserWriter Plus. Our heat presses are both from George Knight Company. I use the Economic 12" x 14" shirt press and an older model cap press.

The Wallaby is an ideal portable machine, giving me the ease of use and full power of the Macintosh in a faster, more rugged, lighter (less than 10lbs) package. The Gemini is a very cost effective upgrade for the Macintosh Plus; it actually runs faster than our Macintosh IIci, an expensive, high-end computer. The only thing I lack is color on the screen and I don't need it for 99% of what I do. Everything is color separated during printing and the software will handle the color with or without a color monitor.

If I were to change any of this I would get a better scanner (300dpi color) and a higher resolution laser printer for better grey scale printing. A double-headed shirt press would also be nice for big jobs, as I could prep one while the other was pressing.

What software do you use? My most used piece of drawing software is Adobe Illustrator 88. This program works with postscript requiring a Postscript laser printer such as the Apple LaserWriter. Illustrator allows very precise control over lines, shading, typesetting, color, layering, and more. One of its nicest features for this type of work is that in addition to working freehand, you can scan in a template, quickly trace it, modify the tracing, and resize it without getting jagged edges. For editing bitmapped images (scans) I use DeskPaint. While this inexpensive program is rather small and limited in some ways, it is handy (as a desk accessory under the apple menu) and it will work with a number of file formats including MacPaint, TIFF, and PICT. For high-end work, especially if it involves color, my favorite would have to be Adobe PhotoShop -- the cream of the crop.

What system of hardware and software should I buy? This question is really too large to be completely answered here, as your needs may vary from ours. The only constant in the system is that the printer must be based on the Canon CX, SX, or LX print engines, such as those from Hewlett-Packard, Apple, QMS, and others. I would recommend that you contact a dealer such as Idea Engineering in Nebraska (402) 296-3915 or Computer Friends in Oregon (503) 626-2291. Idea Engineering handles IBM-PC compatible systems and Computer Friends specializes in Macintosh based systems. Which

family of systems you go with (IBM or Macintosh) depends on what you are already using if anything, and what your local dealers can support. You might want to investigate magazines like MacUser, MacWorld, PC World, PC Magazine or others to familiarize yourself with what different hardware and software can do. If you were to press me, I would recommend a Macintosh compatible system for its powerful graphics, Postscript, and ease of use.

#ENDCARD

#CARD

Chapter 4...

## Printing

How do I print the image reversed to read correctly on the material? On the Macintosh you select Flip Horizontal in the Page Setup Options. On other computers you may need to be able to flip the image before sending it to the printer, or use special, computer specific printer driver commands.

Can I get more than one color on a transfer? Yes! There are two basic techniques; multi-pressing and multi-pass printing. Multi-pressing involves printing each color on a separate page and then aligning them on the shirt or plaque as each one is heat pressed. Printing on high temperature acetates helps this technique, as it makes it easier to line up the successive images. The problem with this method is that it is slower than multi-pass printing and achieving good registration can be difficult if the material of the shirt stretches during the pressing process.

I use multi-pass printing because it is easier, faster, and more reliable. The only drawback is you must be a little more careful about maintaining your laser printer or the images will not register properly during printing.

How do you do multi-pass printing? Begin by separating the image into its component colors in software. How you do this will depend on the software package you use. In bitmap oriented packages like DeskPaint, MacPaint, and PC Paint Brush, you can create your complete image, save multiple copies and erase the unnecessary parts in each image. This is covered in greater detail in the article Getting Transferred on page 131. More powerful software like MacDraw or Adobe Illustrator, will let you specify the color of picture elements and then do the separation for you, or you can hide all but the color layer to be printed at each successive color pass. Load the printer paper tray with the right amount of paper and print the first color pass. I always start with the lighter colors and print my black layer last. I like to use black lines to join colored regions for improved registration. Try pressing the paper in a heat press to preshrink it for better registration.

Note how the paper enters and leaves the machine. Older Series I (CX) laser printers that use the EP cartridge, like the Apple

LaserWriter and HP LaserJet I flip the paper over in the machine, thus printing on the side facing down in the paper input tray. Newer Series II & III (SX) printers that use the EP-S toner cartridge typically have a straight through printer paper path. The side facing up in the printer tray will be printed on. So, for CX machines the next pass will be head-in/face-down, and for SX machines the paper should be placed head-in/face-up in the paper tray. Place the once printed pages in the paper tray, change the Transfer Toner cartridge, and print the next pass. Repeat this for each additional color. I typically print one or two extra copies as it is easy to do and saves me the trouble of rerunning the job later if I make a mistake during the transfer process.

What is color mixing and how do I go about it? Color mixing refers to using two or more base colors to produce a color that is not available in a single cartridge. For example, red and yellow transferred to the same area will produce orange. Some basic combinations are: Purple = 50% Red + 50% Blue; Orange = 20% Red + 80% Yellow; Brown = 50% Red + 50% Green. By adding black you can make the colors darker. Different materials will show the colors differently, depending on the polyester content and its own color. For example, yellow on a blue shirt will look greenish. Make samples for yourself, mixing the colors that you have in different combinations. Use these to know what you'll get when you go to do a project.

How accurate is printer registration and how can I improve it? The registration will vary somewhat from machine to machine depending on the age of the machine and how well maintained. The type of paper you use can also affect the registration. Our four laser printers typically produce between exact registration and 1/16th of an inch off (the oldest machine). Cleaning up the older machine, and possibly replacing the paper feed rollers would probably bring it up to par. On the machine that I use most, and thus keep cleanest, I get almost exact registration better than 95% of the time.

How you load the paper in the paper tray is critical to good registration. Fan the paper to separate the pages. Always be sure that the paper is even and butted up against the front edge and side of the paper tray. Sometimes it is necessary to run the paper through the printer and print nothing on it. This will shrink the paper just a little and it should not shrink much more while printing your real color passes.

Other tricks are masking and overlapping your image areas a little. A two or three point (1 point = 1/72") black outline covering the interface between two different color areas will give the appearance of perfect registration even if the registration is off by as much as half the width of the line. A similar effect can be achieved by making the colored areas overlap. This works well if one of them is very dark and the other is not. When you transfer to fabric, the registration is less critical and a small misalignment may be covered by a little bit of spread as the dye transfers to the cloth. On the other hand, metals,



ceramics, and other hard surfaces require tighter registration. What parts of the machine should I clean to improve the registration? The paper pickup, horizontal adjustment (in CX machines), and paper feed rollers just before the machine corona area are the critical components. Clean them with Fedron, BlackLightning Cleaning Fluid (TSFED8000), or some acetone based solution that will keep them soft. Do not use alcohol as it will harden the rubber rollers. Be sure to remove the cartridge from the machine during the cleaning process and allow the machine to completely dry before reinserting the toner cartridge. The acetone can dissolve the sensitive cartridge OPC imaging drum. For more details about cleaning your machine, see the appropriate machine cleaning article in the Laser Printer section of this book.

What type of paper should I use? I use regular bond copy paper. The exact brand is Hammermill Tidal DP, but any similar paper will do. For transfers, do not use the extra hard LaserPlus paper. Its hard surface may result in more backgrounding and the slickness of these papers causes them not to feed well, producing poor registration in multi-pass printing. For acetate you can use Avery Transparencies (AVLAB5282).

Why did my cartridge print light at first? Any toner cartridge requires a break-in period of a few pages to as many as twenty. Other causes of light print that may also appear later during a cartridge's life cycle are dirty machine corona/transfer wires, a cold cartridge (let it warm to room temperature for a few hours before removing it from the bag), and excessive humidity. Be sure to store your cartridge in its sealed bag with the desiccant when not in use. Extra desiccants are available (UMDESPC25).

Sometimes my cartridge prints too dark. What should I do? If you have a very dry environment, it can cause the cartridge to print overly dark resulting in backgrounding and smeared letters. First try turning your printer's density setting to the lowest level. Also, some cartridges are more sensitive and need two tabs because the Transfer Toner charge is so strong. The second tab will reduce the laser power a little. If this doesn't help, try humidifying the room and storing the cartridge outside of its bag.

I occasionally get smeared prints. How can I prevent that? This could be caused by the overly dark printing mentioned in the previous paragraph, or simply by a dirty fuser wand. When the paper goes through the fuser assembly, a tiny amount of the toner and the sublimation dye is released and collects on the fuser wand. If you print many similar images in the same place on the page it can dirty the wand excessively in one area. Your transfer cartridge comes with a package of five extra felts. If the felt you are using gets dirty, just change it with one of the clean felts. (Hint: it is easiest to remove the dirty felt from the fuser wand when it is just out of the printer and still warm.) After changing the felt you may want to run a blank page or two to let the fuser assembly clean itself. Dirty felts can also

cause excessive backgrounding, streaks, and offsetting on the back of the page.

When I print the same image over and over, I sometimes get marks on the back of the page. What causes this and how can I avoid it?

This is probably offsetting. A little toner is building up on the upper fuser roller and being offset to the lower roller, and then to the back of the paper. If you have to print one image many times, try printing it in sets of ten followed by two or three blank pages, and then another set of the image. This will help reduce offsetting. SX machines, (EP-S) are more prone to offsetting of the toner.

Can Transfer Toner damage my printer? No, it won't damage your printer, but you may need to clean off the tiny amounts of dye that vaporize during the fusing process and adhere to the surfaces of the fuser assembly support structure (not the rollers). It is easy to clean off with a little TransClean on a cotton ball. Be sure to turn off your printer first and let it cool down. I have printed almost 100,000 transfer prints on my laser printer over the last year-and-a-half and the build up is so minimal that I have only cleaned it once.

#ENDCARD

#CARD

Chapter 4...

## Transferring

What is the most important issue in transferring? Cleanliness and preparation! Keep your area clean or you will contaminate your work, leaving smears, finger prints, and stray marks on fabrics, metals, and other surfaces. This means everything from your hands, to your laser printer, workbenches, floors, and heat press (heating platen and other parts as they may brush the T-shirts or other materials). Also, optimize your work area to minimize motion and time so you can work efficiently. A small savings of a step or an extra reach can mount up to a lot of time over the course of many jobs. Look at the flow of materials and motions as you work. Think about how you can minimize the effort. Time yourself to learn how long things take and better estimate your costs so you can give competitive bids. Be sure to securely bolt the heat press to a strong, heavy table. Heat presses are heavy and very hot. Think safety! Are the time and temperature settings on my heat press important? Yes! Too much of either and you may scorch your materials, produce backgrounding, or blur the image. For hats (100% polyester) I use 10 seconds and light pressure at 425°F. For T-shirts use 20 to 45 seconds and light pressure at 400°F. I do plaques at 425°F with hard pressure for 20 seconds on premium metals and brass and longer with the economy metals. PVC I do at 325°F with a light pressure for 10 seconds. These settings may vary from press to press due to the

differences in heating of individual presses.

Is the heat press pressure important? Very! Too little can leave wrinkles and valleys for the dye gasses to flow along and produce light copy, blurring, and smearing. Too much pressure can produce burning, compression of fabrics, and even light copy due to the lack of air gap. I set the pressure before beginning a run by pressing, without a transfer, one of the items I'll be doing.

How do I prevent the heat press from leaving marks on my work?

First you should clean your press. When it is cool use TransClean, then heat it up to 400°F and press it repeatedly on plain paper until it comes clean. To prevent the press from getting dirty in the future, mask your work with a piece of paper between the top of the transfer and the platen. The mask should extend an inch or so beyond all the edges of the platen and be of a thin paper like newsprint. Do NOT use printed newspapers as the ink will dirty your work and the press. I found that the best solution is the clean paper on the ends of rolls from our local newspaper printing company. They typically have a roll a hundred or more feet long of plain, unprinted, newsprint paper left after a run. They sell this by the pound (30¢/lb in our area) to schools and anyone else who wants long rolls of plain paper. I take a sharp knife and cut off a dozen sheets with a single cut (straight into the roll) and then cut the resulting yard long pages in half to give myself a stack of large, clean, thin sheets of masking paper. I find a mask can be reused four to ten times before I need to switch to a clean one. Masking also helps prevent scorching the fabrics, scratching the platen when doing metals, and reduces backgrounding.

How do you line up a transfer on a T-shirt? I place the shirt such that the bottom of the collar is at the far edge of the press table and the center crease runs down the middle of the table. Then it is a simple matter of centering the transfer on the table. (Our shirt press is 12" high by 14" wide.)

What gives the smoothest, crispest edges when transferring text?

The destination surface is very important here. If you try to transfer tiny print to a coarsely woven fabric you will not be pleased with the results. On the other hand, if you transfer the same image to metal or ceramics, it may look even better than on the paper. The rule is that the resolution of the destination surface controls how crisp your edges will be. Good strong pressure in the heat press, and no intervening dust or other objects (remove that protective film from metals) is very important. Also, avoid the edges of your heat press where the pressure may be uneven. Use the shortest press times possible to get the best results.

How many times can I reuse a single transfer? Transfers generally produce their best image the first time but can be reused as many as six times. How many transfers you get from a single printed page will depend on the time and heat. The hotter and longer it is heated, the fewer transfers you'll get; but the colors will be richer the first

time. I generally only use a print for one transfer. The exception to this is four color work for photographs. I have found that transferring it once for 25 seconds at 400°F onto scrap, and then for 40 seconds at 425°F onto the real material produces beautiful images. The slight blur caused by the movement of the dyes during the first transferring makes it look more photographic by softening the computer dots. This pre-pressing will also remove any dye in the background of your image. More colors on the page require more time during the pre-press: You may find that a single color image needs no pre-pressing, but a four or five color image may need as much as 30 seconds.

Can I use a household iron to transfer my images? Yes, but it must heat to at least 350°F and preferably to 400°F for good color and a permanent image. Try the highest setting. Many flat irons will work, but avoid those with steam holes, or carefully move the iron around to give even heating. Do NOT use a waffle iron, five-iron, or other heating elements that might start a fire. Work safe!

Why do I sometimes get long streaks coming off of a letter or graphic when I transfer? You probably had a wrinkle and not enough pressure in the heat press. The wrinkle causes a valley down which the dye can flow, producing a long streak. Pre-press your fabrics and make sure the metal plates are absolutely flat.

I have an image that looks great in print but is muddy when transferred. Can I improve it? Halftones in transfer have less tonal range than original laser output. You need more contrast to properly show off your artwork. Experiment, lighten the light areas and/or darken the dark areas. Also try reducing the printer density.

How do I avoid smearing the image when I lift the transfer? Wait until it cools. The the dye will no longer be active and won't smear. Alternatively, practice smoothly and quickly lifting straight up. With some materials it is best to wait until transfer and material have cooled to room temperature to reduce the sticking of the carrier toner. This can simplify the cleaning of metals as more toner will stay on the paper rather than sticking to the piece.

#ENDCARD

#CARD

Chapter 4...

## Materials

We have transferred to a wide variety of materials including:  
100% Polyester Double-Knit Fabric - Excellent for making patches, flags, and banners. One user had a 12' x 12' photo on a banner!  
Apparel - 50/50 Cotton/Polyester T-shirts, sweatshirts, sweat pants, tank tops, and other apparel.  
Baseball Caps that have 100% polyester front panels take transfers giving rich colors. Light color, white, and neon caps look fantastic.  
PVC - Pipes and flat panels for making signs, tabletops, and coasters.

Open Pore Anodized Metals - Works but the dye is just sitting in the pores and is not bonded.

Specially Treated Metals (brass, steel, and aluminum) - have a very thin surface coat of polyester. These make excellent signs, desk name plaques, trophies, awards, specialty business cards, classy luggage tags, Christmas ornaments, and more. Coated metals are available from a variety of manufacturers and come in a wide range of quality. Some will even resist ultraviolet (sunlight) fading although none we know of will last for years.

Ceramics - When mugs or plates are specially coated with polyester, they produce brilliant results. Coated mugs require special presses and are available from a number of suppliers and may soon be carried by BlackLightning as well.

Leather - If it is untreated (no polyester) then the images are not as brilliant and could wash out, but some interesting effects can be achieved.

Velcro bands were tested successfully for a special project by one customer.

Wallboard - Sheetrock can be high-tech 'stenciled' with transfers. Painted surfaces will often take transfers too.

This is by no means an exhaustive list. Try new things. The basic characteristics are that it must not melt, burn, or warp at the required 300°F to 400°F. A high polyester content is a definite plus and will produce brilliant, long lasting images. Buy small quantities of some materials and try them yourself. Share your results with others. There's a world of opportunity.

Should I remove the plastic film from coated metal I purchased for transferring? The clear sheet protects the finished surface of the metal from scratches. You can remove it before or after you transfer. If you are doing fine detail work then you may need to remove it before transferring as it can blur the image a little. I normally transfer right through it and then let the piece cool completely before removing the plastic sheet. This eliminates the need to use TransClean to remove the toner from the surface of the metal. If you remove the plastic sheet before transferring, let the piece cool completely, peel the paper off, and clean the metal with a dab of TransClean on a wad of toilet paper and then buff it with clean toilet paper.

How can I transfer to 100% cotton? Use prep-spray to add a thin layer of polyester to the image surface of the fabric. This can also be done to 50/50 shirts to improve the brightness and density of the resulting transfers. The new Power Pak Prep-Sprayer applies an even coat to fabrics, metals, ceramics, and other surfaces. (Note the powerpack does not use CFC's.)

Why can't I transfer to black or dark materials? Sublimation transferring is a dyeing process, not a surface coating process. The dye does not mask out the original color of the material like paint does. If you transfer onto a dark material, the dye simply will not

show up very well. However, transfers work beautifully on grays, light colors, and florescents! In fact, I prefer these colors to straight white for my work.

Can you offer any other tips on materials? Test, test, test. Make up sample sets for yourself showing how the colors look at different half tones on different materials with varying pressure/temperature/time combinations. Talk with others, share your results. Test samples can be used innovatively. Cover shirts with many little transfers in testing and make a coat of many colors. Make a patchwork quilt with your scraps. Be creative and write The Flash.

#ENDCARD

#CARD

Chapter 4...

Other

What are some other hints you can give? Inspect all incoming supplies for damage. Shirts may have holes, dirt, etc. Clean any dirty materials before pressing or the dirt may become a permanent part of your work. Separate transferred surfaces from clean materials to prevent dye cross over. I use the clean unprinted newsprint paper between T-shirts when I am packing them to send to the customer. Count your outgoing orders thrice. Have extra supplies on hand. I find I have to pull about 0.5% to 2% of my products due to errors. Sell them as seconds.

Personalize your work. Make your own custom tags for shirts. Have labels printed for your mugs and plaques, we have found that round laser printer labels from Avery will stay on the bottom of a mug for many washings. Be proud of your work and let people know that you did it. Put your phone number, address, and name on them.

What are other sources of information? Get a subscription to Impressions Magazine (Gralla Publications, POB 801470, Dallas, TX 75380-9945), The Engraver's Journal (POB 318, Brighton, MI 48116), and a computer magazine. And of course, read The Flash!

#ENDCARD

#CARD

Chapter 4...

Product Ideas

T-shirts and Apparel - Use 50/50 Cotton/Poly or prep-spray. Whites and light colors look best. Double-knits produce even better transfers.

Hats - Baseball caps, golf caps, and more. Most are available with 100% polyester front panels.

Tote Bags - Use prep-spray on canvas tote bags. Encourage people to use tote bags rather than paper bags when shopping and help save

trees.

Plaques - Available in a wide variety of shapes and sizes and can be nicely mounted on wooden backs. Premium metals are the best and should be used where quality counts.

Business Cards - Novel business cards from metal! Great gift and award idea!

Brass Christmas Tree Ornaments - Interesting shapes like tear drops make great Christmas ornaments and gifts. Personalized them to keep the memories alive.

Key Chains and Luggage Tags - Metal & PVC can be used to make classy personalized tags. Especially beautiful in brass.

Dog Tags - "My name is Spot, please tie me up and call (825) 555-1212."

Signs - Metal, vinyl, PVC, or 100% polyester fabric. Bigger signs can be done with multiple pages pieced together.

Refrigerator Magnets - Metal, vinyl, or PVC can be transferred to and then attached to magnetic backing for fridge magnets and removable car signs.

Placemats - Vinyl placemats are great for kids. Washable. Harder vinyls are better. Very soft vinyls may bleed the colors over time.

Bumper Stickers - Special stickers will accept transfer dyes. We've seen them with iridescent backgrounds and in florescent colors. We hope to line up a source of materials for this in the fall.

Patches - Transfer to 100% polyester; sewn to iron-on glue backing or stitch directly to clothing make brilliant custom patches.

Medallions - Round metal discs or 'coins' make great medallions.

Ideal for promotions: ie. Collect five and get a free pizza.

Coupons - One customer uses a custom mixed color of transfer toner to make unforgeable gift certificates. This rates as a most unique use of transfer toner.

Circuit Board Labeling - Most electronic circuit boards will accept transfers for labeling where components go and who manufactured the board. Transfer toner is not conductive so it can not be used to lay down the traces. People have had success using the graphic toner to mask against the acid baths and then using transfer toner to label the final circuit board.

Equipment Front Panels - A number of engineers are using transfers to make up the front panels for mockups and limited runs of equipment displays. We have seen several creative and beautiful examples of everything from mockup panels to small scale production runs showing all the lettering for the dials as well as the company logo, artfully done.

Explore, experiment, enjoy, and write us with your discoveries. There's a whole world of opportunities for making gifts and money with transfers!

Send your questions, tips, and ideas to Transfer Secrets c/o The Flash, BlackLightning, Riddle Pond Road, West Topsham, Vermont 05086.

### Keep it Cool... But Not Frigid!

In hot weather or when printing a very long job, your laser printer can overheat. If it gets too hot, say above 90°F, it may jam or lose contact with the computer when circuits overheat and parts expand. You can usually solve this problem by being sure to keep the printer's filter clean and change it as necessary to allow proper air flow inside the machine (see the Ozone article) maybe even blowing a household fan across the laser printer to assist its internal fan during really hot weather. Laser printers generally like the same temperatures as their human officemates.

Keep the printer and the cartridges out of direct sunlight to prevent over heating which can damage electronic circuits, destroy the cartridge photoimaging drum and clump the toner.

On the other hand, don't let your printer get too cold either. Most printers are not designed to work at less than 50°F. If you're working in an unheated space, such as a warehouse or garage, you'll need to enclose and heat the printer area to maintain the proper temperature. Failure to do so can damage your printer, the cartridge and the toner due to thermal expansion and stresses on the cold printer & cartridge parts such as the fuser roller & photo drum.

### CARtridge Pooling

If you only go through one cartridge every year or two, you may run into difficulty with backup cartridges that sit on your shelf and age years beyond their usefulness before you ever get a chance to use them. Consider cartridge pooling with a local friend that has a similar machine. The back up cartridges will be put to use in good time and there will still be a back up for both of you.

### Inkjet Paper Possibilities

A Flash reader tells us that Hammermill Laser Print paper works beautifully with Inkjet and Deskjet machines. A great way to avoid the extra costs of special deskjet paper and on top of that, the Laser Print paper is a high quality paper that will give your reports and presentations a sharp, professional look and feel. Laser Print paper is available at most bookstores and office supply houses.

### Blacker with Dot Gain

When you are laser printing something that will then be photocopied or offset printed, you do not need to have completely solid blacks. This is because as the inks in offset printing are pressed onto the page, they spread a little. Also, the technology commonly used to make the printing plates cannot support more than about 150lpi; thus the white lines you see in the solid black areas will fill in. This is called dot gain and results in dark things getting darker and light things getting lighter. This is why a photograph in your newsletter



may appear too dark. You can compensate for this by lightening the image when you print it on your laser by using software like PhotoStyler or PhotoShop. You can take advantage of this effect because it will darken up solid areas on your laser printed output that should be absolutely black but aren't.

#ENDCARD

#TAG C4S4P1.pct

#CARD

Chapter 4...

## More Tricks of the Trade

by Walter Vose Jeffries of BlackLightning  
from The Flash volume 4, issue 1

There are many little tricks of the trade that make transferring easier and help produce better finished products. This is a compilation of more hints and tips readers have sent in or we have discovered, often as a result of your questions. Write us to share your ideas, problems and solutions...

Making Your Own Flat Iron Heat Press - BlackLightning Laser Printer Transfer Toner is not just for professionals and commercial use. A lot of small businesses, departments, and individuals are using Transfer Toner to make custom shirts, hats and signs. Heat presses are great if you have the money and are doing a lot of shirts, but a fair number of people are using household steam irons to press their transfers. The problem with a steam iron is that it has vents in the bottom which create cold spots and result in light areas in the transfer. This can be reduced by carefully shifting the iron. A better solution is an older flat iron without steam vents. These have become very hard to find and most are old and worn out. However, you can make your own. All you need is a steam iron and a sheet of thin metal. I used 1/32" thick uncoated aluminum. Place the iron flat on the metal and trace the foot with a nail. Next make another tracing about 1/2" out from the first and cut along this last line. Then cut slits from the outer to inner tracing so you can easily fold the metal edges up along the sides of the iron's foot. Hammer them gently to get a secure fit. By bridging the vent holes this way you can get an even heat across the whole iron.

#ENDCARD

#TAG

#CARD

Chapter 4...

Be Cool! - Let your transfers cool completely to room temperature before lifting. You'll get less toner on the material and the paper

won't rip. Extra important on fabrics and some metals. Mugs however should be stripped at their hottest. Then dunk them to cool the surface and prevent the dye from migrating and blurring. If the paper sticks, the mug was too cool. Use TransClean and a wooden popsicle stick to remove the adhered paper you can't pull off AFTER cooling the mug. (If you don't strip the paper from the mug prior to dunking it will adhere tightly to the mug surface.) If your mugs are too hot (>475°F) then scoop up a little water and swish it inside the mug for a moment before dunking the whole mug. This will help prevent cracking. After the mug or metal have cooled completely, then clean off the residual toner with toilet paper and TransClean. Premium is Better - We find that the premium mugs have a much smoother, more even surface than the promotional mugs. This translates to the ability to transfer from the top to bottom edges on premium mugs.

Custom Heat Press Pads - When applying transfers to already decorated shirts or doing the cuffs on sleeves, we needed custom base pads for the heat press. Silicon rubber (expensive) works, but you can also get good results using the dense black foam used to pack many products. Test a small piece by pressing it between two sheets of paper to make sure it can withstand the high temperatures needed for transferring. Cut it to size and slip it inside the shirt cuff or body. This gives you a raised, smooth surface to transfer to, so you can apply heat to just the area of interest.

Cleaning - If you are using the premium UltraCoat metals and pressing through the plastic film, be sure to clean off the pink lettering on the film first or it may transfer to the metal. Use Acetone, Fedron, or BlackLightning Cleaning Fluid on a piece of tissue.

Double Sided Signs - You can make double sided signs for advertising by using the BlackLightning Premium UltraCoat metals. These are specially coated with polyester for transferring on both sides. Simply sandwich the metal between two transfers and press it at 400°F. Be sure to heat a little longer to get the bottom transfer to activate.

Scanning - When cleaning up a grayscale or color scan, leave your monitor in 1 bit or Black & White or use the Threshold feature in Adobe PhotoShop to check for stray marks. You may find it easier to cut away subtle shades that will show up when you transfer but that may not be noticeable on the screen because very light grey shows as white.

Multi-Pass Color Printing - When printing several passes on the same page to get multiple colors, you may have a problem with registration and paper curl. Paper pre-pressing prior to printing prevents potential printer paper problems. In other words, you can prevent paper curl and jamming by running the paper through your printer upside down prior to printing. This puts a reverse curl in the paper and the fuser rollers help dry the paper somewhat.

Another way of flattening the paper is to press it in a T-shirt press until it stops steaming. This removes the moisture and shrinks the

paper so it becomes dimensionally stable. Be careful not to make the paper too dry or it will tend to stick together and jam in the printer due to static.

You can also keep paper dry by storing it in a TupperWare container with desiccant packages.

Lastly, when doing multipass printing, keep sheets that are printed and waiting to go back in the printer pressed flat. I use two whole reams in their wrappers as a weight.

I have printed as many as 8 passes with excellent registration using these techniques. This combined with keeping my laser printer clean gives me a yield of about 80% 'exactly' registered, 15% within a 16th of an inch, and 5% misregistered. I always print a few extra copies since I might also make a mistake during transferring or want to keep some on file.

Fuser Lamp Wattage - Some customers have had problems with their transfer toner because the fuser lamp in their printer is too hot. The fuser lamp is replaced from time to time as part of routine maintenance. Many varieties will work with regular toner but some are too hot for transfer toner. The fuser temperature is controlled by a temperature sensor that turns the fuser lamp on and off to heat the roller. If the lamp power is too high, it will tend to overshoot the desired temperature. This overmelts the toner, causing excessive build up on the fuser wand and streaking on the page. If this is a persistent problem, the only solution is to replace the lamp with one of the proper power.

#ENDCARD

#TAG C4S4P2.pct

#CARD

Chapter 4...

Keeping Clean - Transfer Toner is different from regular print toner. If much toner builds up on the felt cleaning pad it can cause backgrounding, streaking, and offsetting. Printing some blank pages between jobs will help keep the rollers clean. Each transfer cartridge comes with extra cleaning felts and you can purchase more if you need them. These felts are thicker than the felts shipped with other cartridges, so be sure to use only Transfer Toner felts when printing with Transfer Toner. Some tricks for minimizing the build up of toner are to make large images go diagonally on the page. Avoid the long orientation as it over uses one spot excessively and doesn't allow the printer to clean itself as well as horizontals or diagonals. Even a slight angle off of vertical can make a big difference in preventing streaking.

Mug Preparation - When we have many mugs to produce it is important to set them up as quickly as possible. We use two boxes about one inch high spaced about ten inches apart on a table to hold the mug while we tape a transfer to it. We place the mug with the handle resting on one box and tape one side, then roll the mug

handle to the other box and the opposite side the ready for taping.

CMYK Color Separations - We use Adobe PhotoShop to edit, adjust and separate our scans. For the best results the image on the screen has to be much lighter than the desired printed image. We use the Leveling Tool to eliminate scanner induced grey backgrounding and adjust the hue and saturation. We are playing with the Print Ink specifications and the RGB-CMYK translation specifications and will let you know what we find in a future column. Experiment with these tools in your program. Write us; we'll share your results here. All About Color, page 141 of MacWorld. January 1992, is a great article on color.

CMYK Registration - Registration is sometimes not as critical with color separated images. This will vary with the image. If the image looks blurred or the colors are off, it may be due to misregistration.

Watch That Indicator - Beginning in the fall of 1991 all BlackLightning transfer cartridges were shipped with an indicator that tells you when the desiccant is used up. Ideally, all three circles should be blue. Change the desiccant and let the cartridge sit overnight if the 40 indicator turns pink. Don't use the cartridge if the 50 indicator turns pink or you may damage the cartridge and void its warranty. Changing the desiccant and letting the cartridge sit for a day or two may fix it. Always keep your transfer cartridges sealed in their Zip-Lock bags when not in immediate use and check the bags for leaks from time to time. Additional desiccants can be purchased.

Proofing - Use regular print black and color cartridges to proof work in multiple colors. You can now get seven colors of cartridges from BlackLightning that will print color on paper.

Prepressing To Eliminate Backgrounding - Paul Brehm of Ohio suggests a way to eliminate backgrounding and get maximum color saturation. Press the transfer at 400°F for 10 seconds onto a scrap of material (we use polyester). Let the transfer cool to room temperature before removing it from the fabric. Then do the real transfer for the maximum time the material will take. The first press uses up the dye that was spread by the fuser rollers, letting you transfer a lot longer the second time without getting backgrounding. This technique is useful with all materials, mugs, T-shirts, metal, etc.

Keeping On Center - Howard Eglowstein of Byte Magazine has a good way to mark the center of a piece of fabric. Fold it twice, and pinch the inner corner. This will leave a crease. Center that crease on your heat press and use it to center your transfer on the material.

Transparent Transfers - David Bueschel in Wisconsin has a way to create color transparencies for presentations, pseudo stained glass windows and transparent window signs by transferring onto transparent polyester film such as Avery Transparencies. Clean the film with TransClean. For a dark black, transfer the other colors first and clean the transparency. Then, on a separate piece of paper, print the black pass using graphic toner. Press this graphic black image onto the transparency for 40 seconds to produce glossy signs. Or, do

the black by simply printing with graphic toner directly to the transparency after all the other colors are pressed on and cleaned up.

Matte Finish On Plaques - You can get an impressive matte finish on plaques by using Graphic Toner rather than Transfer Toner. Here, you are actually transferring the toner rather than a dye. The trick is getting the toner to release from the paper. Try experimenting with freezer paper and the backing for Avery labels. This same technique may be applicable to making printed circuit board etchant masks.

Darker than Dark - Print the same color twice to get extra rich dark colors. Blue+Blue->Navy Blue.

More Product Ideas - Many people have written with product ideas to add to the list in our last issue. They include:

Placemats - Vinyl desk cover works well.

Tapestries & Banners - Several people have made large (4' x 30', 10' x 10', and larger) banners and tapestries using transfer toner. The computer enlarges the image and prints it on many pages. Then just transfer in the proper order.

Shower Curtains - Make a wild shower curtain of double-knit polyester with dozens of colorful designs. The double-knit material is thick enough to stop the shower spray, yet it feels soft and looks much better than the tacky clinging plastic shower curtains. We sewed a dog chain into the bottom to keep it from billowing into the shower. Easy to clean too. Just throw it in the wash!

Window Curtains - Several Flash readers wrote about making window curtains for their home, one using kid's drawings.

Handkerchiefs - Easy to make; just transfer and trim. A great gift idea.

Kids Clothing - Make clothes and then transfer on a design that can even go across the seams for better than professional looking workmanship.

Send your questions, tips, and ideas to Transfer Secrets c/o The Flash, BlackLightning, Riddle Pond Road, West Topsham, Vermont 05086.

### Printer Preparedness

If your laser printer or copier is at all important in your work, then you should always maintain a backup cartridge. The rule of thumb is:

If you use less than 1 cartridge every 6 months, have 1 extra on hand.

If you use more than 1 cartridge every 6 months, have 2 extra on hand.

Keep extras sealed in their foil bags and stored in their boxes to prevent damage and minimize aging and they may last for years.

These preparations could save you the added expense of next day shipping and lost business due to down time of your printer.

You know you're near the end when...

The waste reservoir in your cartridge begins to overflow. There is a waste reservoir in every CX, SX, LX toner cartridge that catches any toner that does not manage to get onto the paper. This overflowing will often cause streaking on the page. This streaking may be an indication that the cartridge has almost no toner left in it. Try cleaning the corona wires in the cartridge (following the directions on the label or in your manual) and try rocking the cartridge to get a little more use out of it.

Zip It Up....

BlackLightning cartridges are packaged in resealable zip-lock foil bags. These bags allow you to reseal your cartridge for storage and can be cleaned for reuse when returned to us. This will help assure you of better quality, especially with cartridges that you periodically remove from the printer before they are empty such as colors and transfer cartridges. Don't throw them away! Send them back! Reduce, Re-use, Recycle!

#ENDCARD

#TAG C4S5P1.pct

#CARD

Chapter 4...

Full Color Photo  
Transfers

by Walter Vose Jeffries of BlackLightning  
from The Flash volume 4, issue 2

We have received a tremendous number of requests for information on doing full color photographs with Transfer Toner. We've not yet perfected the process to our own satisfaction, but due to the high interest level, we thought we'd share our findings to date and keep you posted here in The Flash as we improve the technique. Write us with tricks you've heard of or discovered and we will share them with other Flash readers.

Our objective is to produce near photographic quality, color accurate transfers. By photographic quality we mean that the dots used to create the image should be minimized and the shading should be as close to continuous as possible, avoiding the stepping and over exposed highlights normally associated with computerized photos. By color accurate we mean that the colors in the final transfer onto white polyester should be as close as possible to the original photo. The following is the result of our experimentation over the past year. It is based on using Macintosh software but you should be able to easily generalize the techniques to use with PC computers and software like PhotoStyler if that is what you have. Most higher-end PC and Mac photo retouching software that do color separations have

similar tools. Unfortunately we can't help you with programs other than PhotoShop as it is the only one we use. If you get stuck, try consulting your manual's index and table of contents. Try synonyms. Lastly, call technical support at the company that makes your software and possibly fax them these instructions.

The down side of doing color separations is that it takes a lot of memory and processing power to do large full color high resolution images for T-shirts, and even a small image for a mug can use up a lot of memory. For our work we use a Mac IIci with 8MB RAM, 8 bit video, 105MB HD, Adobe PhotoShop 2.0, a 24 bit color 600dpi scanner, and a LaserWriter with an Accel-a-Writer upgrade for speed and increased resolution. We maintain ~20MB of hard disk space free for image manipulations and temporary files. With this setup and practice we can take a postage stamp or a color wallet size photo and blow it up to a full size T-shirt in about 5 minutes.

Accurate color matching is still a hurdle we have to cross. The procedure we outline below is designed to give good color matching with pre-pressing, but is not exact. The pre-pressing is very important as that is where you can increase the resolution of your image by dithering it to almost photographic quality rather than computerized with visible dots. The dithering is achieved when you heat the transfer causing some of the dye to vaporize, migrate and fill in the space between the computer dots. This softens the graduations between shades. This mixing of the dyes does not happen at the same rate for all colors so the first image will look too dark and the color will be way off. But, the next press should give good color and excellent contrast and brightness.

Detailed Explanation: (See summarized procedure on page 162.)

1. The first step is to scan the photo at the highest resolution you can with the available memory. The reason for starting with the highest possible resolution, is then, once the image is in the computer, you will be able to better edit it, clean it up, and you can then easily reduce the resolution for the final image. Once you've scanned it, you can't increase the image resolution without getting jagged edges. The 100% refers to the scaling setting. The 0,0,0 refer to RGB settings on our scanner.

#ENDCARD

#TAG C4S5P2.pct

#CARD

Chapter 4...

2. We over scan a little to make sure we get all of the image. Next step is to crop the image down to just the rectangle we will use. By reducing the image size we save memory & speed up the program.

3. Rarely is the original the exact same size as the final transfer. Once you've cropped the image, resize it and set the resolution that you want the final transfer to be in lines per inch. For our purposes here, Unlink the file size (resolution or dots per inch (dpi)) so you can

separately adjust both the size of the image (height and width) and the dpi. Each dot will later be translated to an imaging line so the dpi here is the equivalent of lines per inch (lpi) in the next step. In general, avoid seams in fabrics and getting too close to the edges of metals or mugs as they are less likely to be perfectly smooth and you can get blurring. Hard surfaces need a finer dpi and rough surfaces like fabrics can take a lower dpi giving more levels of shading.

4. On the Macintosh, the Page Setup Options on a postscript laser printer allows you to flip the image left to right so the transfer will press correctly facing, mirrored. PhotoShop can also set the printer dpi and lpi information in the page setup dialog. Note that a larger number in the lpi will give you finer lines but fewer levels of shading. A lower number gives more shades, but a chunkier, coarser image. We find that with a 300 dpi printer 30 lpi is good for T-shirts and 48 lpi is good for mugs & metals. For our 600 dpi printer we use 90 lpi for both.

#ENDCARD

#TAG C4S5P3.pct

#CARD

Chapter 4...

4. On the Macintosh, the Page Setup Options

#ENDCARD

#TAG C4S5P4.pct

#CARD

Chapter 4...

4. On the Macintosh, the Page Setup Options

#ENDCARD

#TAG C4S5P5.pct

#CARD

Chapter 4...

5. I like to visually check the image size at this point. In PhotoShop, just click the mouse in the file size in the lower left corner of the image window to get a size preview.

6. Do a save at this point just in case you may want to come back to this point later.

7. The transfer dyes are very strong and you'll need to adjust the lightness, contrast, and brightness of the image considerably to make it print properly. The Levels tool allows you to adjust the brightness and contrast in an image as well as the gamma, or midtones. The Levels tool differs from a contrast/brightness tool in that you can adjust the brightness values of the pixels with middle grey values without dramatically changing the darker or lighter pixels. This setting works best with images which have good contrast. If the photo has poor contrast, try doing the Lightness two or even three



times, or try cropping out the background and working just with the foreground image. We sometimes crop out the background and replace it with a graduated or starburst fill. Play with it and get a feel for how each control adjusts the image.

#ENDCARD

#TAG C4S5P6.pct

#CARD

Chapter 4...

8. Sharpening can enhance the image and give better definition between parts such as a person's clothing and the background.

9. PhotoShop has an impressive array of tools for adjusting color and separating colors to their basic components. I feel I have barely scratched the surface of these tools in the many months I've been using this program and this is the section I expect to keep improving with more experiments. What I have found works best is to do a three color separation ignoring the black in the CMYK (Cyan, Magenta, Yellow, Black) color separation. Color theory is beyond the scope of this article. Try the settings mentioned above and experiment. Grey scale images, of course, don't need this step or the next.

#ENDCARD

#TAG C4S5P7.pct

#CARD

Chapter 4...

10. The Hue & Saturation tool is under Adjust in the Image menu. Like #9, I have settings that I have found work well, but not perfectly yet. I use the lightness setting to lighten up the image. When I have an image that doesn't follow my standard prescription, too dark or color off, then it is time to play with the other controls. Suggestion: If you have a section where the color is wrong, make a file with that section repeated several times and then try various adjustments, recording your attempts and results. This is much faster than trying to adjust the whole image at once. On one design, I selected the parts that were not color correct and adjusted those separately from the rest of the image. But, usually I apply the whole this tool to the whole image.

#ENDCARD

#TAG C4S5P8.pct

#CARD

Chapter 4...

11. Save your work in a new file using the Save As command under File.

12. If I'm doing mugs or other small designs, I'll often gang the images up several to a page. Be sure to leave plenty of white space (50% or more) as the white space serves to clean the fuser rollers of

excess dye. Some positions on the page may have poor registration. See the illustration on the next page.

13. PhotoShop considers each of the color separation levels as a separate page. There are four pages; 1. Cyan, 2. Magenta, 3. Yellow, 4. Black (which we are not using). You are printing each color pass for the transfer onto the same piece of paper by passing it back through the laser printer. Registration is critical. If you get poor registration, the colors may be off and the image will look a little blurry. Get good registration by trying the following tricks.

#ENDCARD

#TAG

#CARD

Chapter 4...

- Using a CX (EP) or SX (EP-S) laser printer. The newer, cheaper LX (EP-L) personal laser printers have a very contorted paper path and I have found they do not give very good registration.
- Keeping your machine clean and well maintained. Dirty and worn rollers slip easily.
- Learning what parts of the page in your machine tend to have the best registration and place your image there. I find on my LaserWriter Plus (CX) that the upper right corner is the absolute best and the whole right half is generally better than the left half of the page. This is directly related to the next item which is my biggest cause of misregistration.

- Pre-pressing the paper prior to printing better registration. This removes moisture and shrinks the paper to a stable size. I am looking for a source of reasonably priced, dimensionally stable paper to use and hope have a source to mention in a future article.

14. I pre-press onto scraps of 100% polyester that I purchase by the bolt at a local discount store. It is extremely cheap material and it does the job. For full color images I find a pre-press of about 30 second dithers the computer dots together, sufficiently mixing the colors and make the image look almost photographic. Even with this extended pre-press time, the color saturation of the final pressing is excellent. For single colors or greys I'll use as little as 7 seconds. You can get some very interesting antiquing effects with the black toner by varying the length of the pre-press time because the different dyes used to make black react at different speeds to the heating. Always wait for the paper to cool fully before peeling the transfer off.

That should get you going on full color photos. Experiment and keep good records of your trials so you can do it efficiently and possibly even share it with other Flash readers. I've run out of space and have several more pages of small tips on other transfer ideas plus how to's on mugs and vinyl that will have to wait until the next issue.

## Jammin' & Crammin'

Persistent paper jams in your laser printer or copier can be caused by several things: a foreign object in the paper path; dirty paper rollers; overheating which causes internal rollers to expand and misalign (clean or replace the ozone filter); worn exit rollers or worn lower fuser rollers. If you get a persistent paper jam, notice where it is occurring and look at the rollers near by. They are a likely culprit. And, keep your eyes on The Flash for more articles on printer repairs...

## In the Background

Pre-pressing transfers for 10 seconds at 400°F will almost always eliminate backgrounding. A common cause of backgrounding with transfer toner is a too high printer density setting. Adjust the density dial by small increments, and monitor the results. Another culprit may be the fuser wand. Keep an eye on the felt. If backgrounding or smearing of the image becomes evident, the fuser felt may be soiled, and needs to be replaced. 10 extra transfer felts are included with every transfer cartridge for just such occasions. Extras are available in the BlackLighting catalogue. See page 215.

## I See the Light!

Overexposed drums are caused by excess light. Even with the protective cartridge drum door, if it is left in a window or bright light it may become overexposed. This results in a dark, brown or orange line, often spanning the length of the cartridge drum. If overexposed, the photosensitive drum does not respond properly to the laser beam of the printer, resulting in poor quality output. Protect your drum by storing it in its box or behind closed dark doors when it is not in the laser printer.

#ENDCARD

#CARD

Chapter 4...

## Transfer Color Separation

### The Procedure

(See preceding article for detailed explanation of these steps.)

1. Scan at highest resolution, color, 100%, 0,0,0 RGB
2. Crop image to focus on what will be used
3. Size image for final product
  - a. Mugs - Max of 3" x 7" at 90dpi for Premium mugs.
  - b. T-shirts - Max of 8" x 10.7" at 90dpi
4. Page Setup
  - a. Page orientation
  - b. Printing Screen
    - i. Auto
      - 1) Printer resolution - 300dpi, 600dpi, etc

- 2) Lines per inch - 90 (same as dpi of image file)
  - ii. Round dots
- c. Options
  - i. Flip Horizontal
  - ii. Larger print area if needed
- 5. Check page size vs image size by clicking on the file size in the lower left of window
- 6. Save
- 7. Levels - 20,1.74,200
- 8. Filters - Sharpen or Sharpen More (I use latter)
- 9. Color Separation - CMYK
  - a. File menu - Preferences - Separation Setup
    - i. GCA
    - ii. Black Generation - None
    - iii. Black ink - 100%
    - iv. Total Ink - 400%
    - v. UCA - 50%
  - b. Do the color separation from RGB to CMYK
- 10. Hue/Saturation - Lightness +75
- 11. Save A Copy
- 12. Gang on page as needed. Be sure to leave white cleaning space if possible. Try using legal size paper for large images.
- 13. Print CMY (pages 1 to 3)
- 14. Pre-press for 35 seconds (15 sec for grey scales)
- 15. Press on destination surface
  - a. Mugs 500°F @ setting #8 (120 sec) on a Genesis 2000 Mug Press
  - b. Apparel 400°F @ 35 seconds on an Econometric Press

#ENDCARD

#TAG C4S7P1.pct

#CARD

Chapter 4...

## Transfer Secrets

By Walter Jeffries

We have had a lot of inquiries about using Transfer Toner with video capture boards which take the picture from your video camera or tape and put it into your computer. After looking at many different systems, we got a ColorSnap 32+ (\$995) from Computer Friends in Portland, Oregon. They make both a PC and a Mac version of their board which you connect to a standard video camera or VCR using an S-Video, NTSC composite, or RGB cable. We chose the Mac version and connected it to a Hi-8 camcorder (the Canon Digital A-1) using the S-Video cable.

The ColorSnap is a joy to use. Installation was absolutely simple; drop the software into the system folder, insert the board into the computer (we were using a Mac IIci), connect the cable to the board and camera, and presto, we were taking goofy pictures of each other

within about 5 minutes and capturing them on to the hard disk. The software is excellent. It focuses on its task and doesn't try to provide extraneous editing features beyond basic hue, saturation, brightness and contrast. This keeps it easy to use and powerful for what it is supposed to do: video capture. The ColorSnap 32+ software comes in two forms, as a stand alone application, and as a Photoshop plug-in module that is accessible from within Photoshop. If you want to capture just one or two images and edit them in Photoshop, the plug-in is the easiest way to go. If, however, you need to get many pictures into the computer at one time, you may find it easier to use the stand alone application to capture them all at once and then use Photoshop or some other image editing program to edit them. In either program you pull up the ColorSnap viewfinder which shows what is being received from the camera in real time. Then advance to the image you want to digitize (using the camera controls) and press the Capture button on the computer screen. ColorSnap then creates a new window on the computer screen containing whatever image the camera saw at the time. This could be coming off of tape or live action through the camera lens.

[Picture 1]

Once you've got the image into your favorite photo editing program, you follow your usual steps for preparing it for transferring to a t-shirt, mug, or desktop publishing document. One thing we did notice was that the colors tend to be a little strange some times. Getting good lighting is very important and greatly affects the color balance. Most of this is due to the camera. Using florescent lights the colors look very, well, florescent. However, under daylight conditions with the sun as our light source the colors were excellent. We also tried using ScanMatch, which we have for our color flatbed scanner, and were able to get excellent colors this way. Then we simply followed the Transfer Toner Color Separation procedure published in the Spring issue of The Flash and in the Flash Compendium to prepare the image for printing with Transfer Toner onto t-shirts and mugs. It works, it's simple & easy to use. The price is right. What more can you say about a great product? We are very pleased.

More Transfer Tricks

Stop that Jamming

When the paper goes through the fuser rollers of your laser printer it steams out moisture. This shrinks the paper (the major cause of misregistration) and adds a curl to the paper which can cause the paper to jam on the next pass. The best solution is to pre-dry the paper using desiccants or a dry box (an air tight box with a light bulb in it). If you need to remove the curl from pages to help prevent jamming, try rolling the paper in the opposite direction of the curl over the edge of a table. If you're getting jamming caused by the page not kicking out of the laser printer (CX) far enough, try adding a little extra downward curl to the bottom edge of the paper so it catches on the final output rollers and kicks fully into the paper tray.

On the EP-L and EP-S do NOT print using the extra long curved paper path for face up(EP-L) or face down (EP-S) as it will curl the paper excessively.

### Strike the Streak

When printing several passes, print the colors with the least coverage first to minimize streaking and backgrounding. Also, for large images or those with heavy coverage, try using legal size paper to give yourself more image area and 'cleaning' paper area to clean off the fuser rollers between images. Be aware that long vertical lines of print do not leave white space for a paper 'cleaning' area and may cause streaks. Put long images at a diagonal on the page to avoid this situation. Another cause of streaking is an overly hot fuser lamp in the printer, a sign that the fuser lamp is either the wrong type, the lamp is old and about to blow, or the fuser temperature sensor has gone bad and needs to be replaced. We have seen a couple of cases where customers had just had their fuser rollers replaced and the new ones were hotter, causing additional streaking, in one case even with regular print toner.

### Moisture Monitor

Get extra humidity indicators and hang one in the room where you are printing. Cartridges that are exposed to humidity will print light and the indicator will help you monitor moisture levels. The indicators don't get 'used up' unless they get very wet.

### What Do I Need To Start Transferring?

The following is a suggested starting point:

1. Compendium and a Flash subscription
2. Economy transfer toner cartridge
3. Emerald Drum (installed in the cartridge)
4. Prep Spray & Sprayer.
5. Shirts - 50/50 Screen Stars Best.
6. Selection of metal: Brass and Aluminum.
7. A Mouse pad or two for experimenting.
8. 5 Extra Desiccants.
9. 10 Extra Transfer Felts.
10. An extra paper humidity indicator or a dial temp/humidity gauge.
11. Transclean cleaning solution if you plan to try this on metals or ceramics.
12. Regular laser printer paper.
13. A computer with software capable of doing graphics or fancy fonts.
14. A laser printer based on the Canon CX, SX, or LX print engine such as the HP LaserJet or Apple LaserWriter family. Beware that the LX engine used in the small personal laser printers is not as good as CX and SX.
15. Ideally a professional heat press that will give even pressure and 400°F of temperature. For simpler work a household flat iron will do the job but it will take longer to do designs larger than the iron's

surface. A mug press is best for doing mugs, but they can be done in the oven with heat tape.

### Vinyl Transfers

Print transfer as normal with Transfer Toner.

Place bond paper down on heat press table.

Clean your vinyl with Transclean and inspect your vinyl carefully for nicks and mars. Cleaning the vinyl first prevents the transfer paper from sticking after pressing.

Place the vinyl on the paper - The vinyl should be smaller than the bond paper below it

Place the transfer face down on the vinyl - Be sure that the transfer paper hangs over the edge of the vinyl so that it will be easy to grab and peel off when the time comes.

Place a non stick Teflon sheet on top of the vinyl

Press for 10 seconds at 325

Take out of the press and peel the transfer paper off after 30 seconds. Too soon and it does not print well. Too long and the paper will be stuck to the vinyl

Trim the paper on the bottom - When you peel off the bottom paper to expose the sticky surface for adhering, the bond paper that you put on the bottom will simply come off with the original crack and peel paper.

Voila! Your vinyl transfer is complete.

### Secure Shipping

UPS provides the first \$100 of insurance, and the ability to track the shipment in case it doesn't arrive, free of charge. With the postal system you must pay extra for both of these important services.

Things do get lost in the mail. Protect yourself and insure it! Also, tape up to nine cartridge boxes together, so they arrive as one package

#ENDCARD

#TAG

#CARD

Chapter 5

### Environmental Issues

In each issue of The Flash, we have touched on some environmental issue, from office recycling, to the Peanut Project. We have collected a few of these articles together in this section. BlackLightning and The Flash were founded in part because of environmental concerns. Our abhorrence for waste led us to remanufacturing laser printer

toner cartridges for our own use. Other people in our area found out what we were doing and asked us to recycle their cartridges too. Thus BlackLightning Remanufacturing was born. This eventually lead to The Flash and over 23,000 customers across the country and around the world for BlackLightning. As many people are now realizing, you can do well by doing good.

#ENDCARD

#TAG C5S1P1.pct

#CARD

Chapter 5...

Home & Office

Energy Use

A Book Review

by Donella Meadows of Dartmouth College  
from The Flash volume 4, issue 2

One mature tree on the south side of your house provides as much summer cooling as five mid-sized air-conditioners. A single open fireplace damper sends 8 percent of your heating bill up the chimney.

The television sets of the United States collectively draw the power equivalent of a Chernobyl-sized nuclear plant when they are turned off. This power allows them to be turned on instantly so we don't have to wait a minute or two for our screens to warm up.

These facts and many more are contained in a small book called Practical Home Energy Savings. It's a guide to reducing your energy costs by a lot, while protecting the environment and preventing the next war in the Middle East. It also contains some great nuggets for dinner party conversations.

The United States has 5 percent of the world's population and uses 23 percent of the world's energy. The "efficiency dividend" could be bigger than the "peace dividend." Poor insulation, inefficient appliances, drafty doors and other fixable faults cost U.S. consumers more than \$300 billion per year - more than the military budget. Superinsulation windows let in more heat than they let out, even on the north side of the house. These windows outperform the best insulated wall because they both conserve furnace heat and gather solar energy. If everyone in the frost belt installed them, the nation would save as much oil as we now get from Alaska. We ought to do that not only to stop more oil spills, but because oil production in Alaska has peaked and is steadily declining.

Beyond the jazzy facts, the book lists what you can do to save energy, starting with what can make the biggest difference fastest and cheapest. First, stop drafts. The average U.S. house has five square feet of holes through which air leaks. These leaks increase most



heating and cooling bills by 30 to 40 percent.

Begin, says the book, with the holes a cat could crawl through. It tells you where you are likely to find them and how to eliminate them.

Step two is insulate.

Step three: Get efficient about hot water. For example, run your shower into a gallon container. If it takes less than 24 seconds to fill, you need a water-efficient shower head. If your family takes an average number of showers, the low-flow head will pay for itself in smaller hot-water bills within four months and earn you a profit after that.

Step four: Install windows that separate heat from cold (the book tells you where to find them).

Step five: Buy efficient appliances.

For warming small amounts of food, a microwave oven can save a third of the power of a conventional electric stove. But you waste energy twice over if you use the microwave to thaw frozen foods. Plan ahead. Let food thaw in the refrigerator. You'll not only save heating energy, you'll also reduce the load on your refrigerator motor.

Color computer monitors use twice as much energy as black and white ones. It does not make sense in either energy or disk-saving terms to leave a computer on when you're not using it.

Compact fluorescent light bulbs, which are two to three times more efficient than regular bulbs, come near the bottom of the home energy-saving list. Lighting is a big energy user in the economy as a whole; it takes 20 percent of all the electricity used in the United States. Some 50 to 90 percent of that energy could be saved without cutting down on illumination. Most lighting is used in the commercial industrial sector. Lights account for only 10 to 13 percent of home electricity consumption.

But compact fluorescent bulbs can save money in the home, too; especially where lights are on at least four hours a day. Over its lifetime, one bulb will save \$40 in electric bills and \$5 to \$10 in replacement costs, and it will save the Earth a ton of carbon dioxide and 20 pounds of sulfur dioxide from a coal-burning electric plant, or 1.25 barrels of oil from an oil-burning plant (enough to run an average car 1,000 miles), or half a curie of high-level radioactive waste from a nuclear plant.

Because of the energy savings already practiced by Americans, the nation's annual energy bill is about \$150 billion less than it would have been. If we were as efficient as West Europe and Japan, we could save \$200 billion a year more - \$800 for every man, woman and child in the country. And, says this book, it's possible to do even better than that.

Practical Home Energy Savings is available for \$8 postpaid from:  
Rocky Mountain Institute, 1739 Snowmass Creek Rd, Snowmass, CO,  
81654-9199

### Are You A Flasher Too?

Do you enjoy writing? Would you like to be published? Have some ideas on laser printers, desktop publishing, transfer or a related topic? Do you have information you think our readers will be interested in? Write for The Flash!

We pay \$25 to \$40 per page for articles depending on content and technical level. We also trade advertising space for topnotch articles. A great way for you to inexpensively reach tens of thousands of readers!

### Got A Great Idea?

We put a lot of thought into the creation of The Flash and all of its articles, but nothing is more useful to us than the reader feedback and ideas we receive. We want to bring forth the information you ask for! So let your fingers do the talking! Submit those article ideas!

### Want A Reprint?

Like an article you saw published in The Flash, and want to print it in your newsletter? We will trade or barter articles. We can provide articles as paper copy and on Mac or PC diskettes. For questions on publication dates, article trading or if you have information you want to share, contact us at (802) 439-6462, by fax at (802) 439-6463, on CompuServe at Walter Jeffries [73130,1734], at InterNet waltervj@coos.dartmouth.edu, or by US Mail at: The Flash, Riddle Pond Road, West Topsham, VT 05086.

### Storing Cartridges

When doing multi-cartridge printing, we have found that hanging idle EP and PC cartridges from cup hooks in a bookshelf works very well. A simple rack with slots like pigeon holes can be made for EP-S and PCmini cartridges. Drape a curtain over the front to protect cartridges from dust and over exposure to light. For the best shelf-life, also store the cartridges in a foil zip-lock bag, ideally with an appropriate desiccant to keep it dry.

### Free Product Info!

Use the enclosed Reader Response Card to request free information on the products you're interested in. Simply circle the Reader Response Number for the vendors you want information from. You can even fax your card in at (802) 439-6463 for the faster service.

[Picture 1]

#ENDCARD

#TAG

#CARD

Chapter 5...

Circular File  
Office Recycling

by Dawn Marie Poland of BlackLightning  
from The Flash, volume 2, issue 2

Our customers often express concern over the environment and what they can do to help, but it is not uncommon for individuals to feel helpless and overwhelmed by the “big” problems. Due to the increasing focus on recycling and environmental concerns, we thought it might be of interest to provide helpful information on how a company can expand their own efforts towards minimizing stress on the environment. There are many simple things that can be done within the confines of the individual company. It is the accumulation of these little things that will have a positive effect on the larger problem.

Most of us first think of recycling when we think of conservation. A lot of the time it may seem confusing as to which materials can be recycled and which cannot. Irony exists in the fact that recycling itself may create a substantial amount of waste and pollution, using a significant amount of precious energy to complete the process. This need not be so, but it does suggest that the three step system of avoiding disposables, re-using materials, and then recycling, is a more effective approach.

Often it is possible to replace common disposable items with a more permanent solution. One very significant solution in today's businesses is computers. They may well be the key to saving our national forests from the paper mills. So, whenever possible, use the computer, not paper. The amazing organizational capacity of the computer also means no more searching through files and piles for that all important scrap of paper or record. This means you save your time and energy too!

Another common item found in the office is the all necessary coffee cup. Instead of stopping at the store each morning to get a large coffee in a cup that gets thrown away, bring in your own mug from home. This can save on a lot of unnecessary waste, and proves convenient to have around the office for other beverages throughout the day.

If going out to a local store for lunch treats, take a cloth bag in which to bring back those delicious morsels. A cloth bag can be washed and reused indefinitely, and saves on hundreds of paper and plastic bags a year that are used by just one person. Just imagine the difference it would make if everyone had one of their own! If you need to have your purchases bagged by the storekeeper, save the paper or plastic bags to be reused again. Many stores offer the choice between paper or plastic. Discourage the manufacturer of non-biodegradable plastic bags by choosing paper.

If you own a store front, bags can also be an expensive inventory item, so encourage and welcome customers who save and return their bags. It may help to give people incentive by offering to donate a few pennies to an environmental organization for every bag returned for reuse.

What can realistically be reused within the typical office? The first and most obvious material is office paper. Most people will use only one side of a piece of paper. Use the reverse side of a page for scrap paper around the office. Only after both sides have been used should the paper be collected for recycling. It is important to arrange a storage area for scrap paper. This will keep it out of the way, yet make it accessible for general use. Once the paper has been used to its fullest, it can be tossed into the appropriate collection box, ready to be taken for recycling. Large envelopes, boxes, packing material, peanuts and bubble wrap can also be saved and kept handy for outgoing mailings.

Another eminently re-usable item is toner cartridges. According to BIS/CAP International, 12 million Canon cartridges were used in the United States during 1989. Of these 12 million, 93% were disposed of, which totals approximately 16,740 tons of solid waste in our nation's landfills. By 1993, it is estimated that 30 million cartridges will be used in the US alone. Not only does remanufacturing save the customer money and provide a wider range of cartridge choices, it also insures that a substantial number of the cartridges in use will stay in use far longer. This means that, over time, the stress on the solid waste disposal system from toner cartridges will be minimized.

The little things are important, too. Take, for instance, the paper clip. It may seem too small to bother saving and reusing, but consider the energy required to mine, transport and process the metal and materials used in their production. The same for rubber bands. Establish handy, organized storage places for these items. Don't buy new when you can re-use.

Part of re-using items is being efficient with the materials available. Whether it be just to the local store, or a number of people sharing a ride to work, the car pool not only saves a significant amount of energy, but will reduce the expense of operating a vehicle. State governments often sponsors car pool hot-line. They help to find and organize commuters interested in sharing rides.

When the item is finally used up, recycle. Clearly labeled, handy storage containers are the key to a successful recycling program. Most recycling centers and town landfills require that materials be separated by type. Call and they will provide a list of items which they recycle and how to sort them. For example, they will probably require that white office paper (and computer paper), newspaper, and color papers are separated. Provide a labeled box for each at accessible locations. Don't forget a container for non-recyclables, too. Most places that accept paper for recycling do not

accept any coated varieties of paper, and the plastic windows in envelopes should always be removed and placed in the "trash box". At BlackLightning, our largest recycling bin is located close to receiving for easy storage of flattened cardboard boxes. Only corrugated cardboard is accepted by our local recycling centers. Above this bin is a shelf where the plastic containers await recycling. There is also a separate storage box for any returnable beverage containers which are returned to a local merchant for cash. Our motivation comes in the form of an office pizza party from the money we collect this way. All in all, a nice bonus.

If your company is fortunate enough to be located with access to the outdoors, as we are at BlackLightning, organic trash, like apple cores, can be composted to make fine fertilizer for anything from the lawn to the garden. In the eating area, provide a container with an air tight lid labeled "compost". This helps keep the smells confined. The food scraps can be taken out to the compost pile and covered with a small amount of dirt, and nature will take care of the rest.

Anything left over that is being directed to the trash barrels should be noticeably less in volume. If your ambitions extend beyond these few helpful hints, there are also organizations whose sole service is to assess your company needs and develop a tailored program for recycling. Contact your local environmental organization or see the yellow pages under Environmental Conservation and Ecological Services, Recycling Centers or Recycling Services. And remember, buy it new, use it up, make it do or we will all do without.

### Doing Well By Doing Good

The Vermont Business Association for Social Responsibility was incorporated in April 1991 to pioneer a new focus for business: "The Dual Bottom Line." While businesses need to be profitable, VBASR members are equally concerned with issues of workplace, environmental and community quality. In fact, it is through innovative commitments to quality in the workplace, community and environment that many VBASR member businesses have become showcase examples of successful enterprises.

With 136 members, the organization has provided cutting edge education programs for members on energy efficiency, health care reform, and "shattering the glass ceiling" for women and minorities. In the coming year VBASR members will be working on the health care reform, linking energy and economic development issues, creating new support structures for progressive entrepreneurs, and continuing to provide high quality informational and educational services.

For information contact:

Carol Miklos

VBASR

PO Box 462  
Burlington, VT 05402  
(802) 462-3355  
#ENDCARD  
#CARD  
Chapter 5...

Peanut Project  
A New Twist To Packaging

by Catherine Croft of BlackLightning

If you've been reading The Flash you'll know about our Peanut Project which has been discussed in several issues. The production of styrofoam peanuts raises concern because of the toxins created in their manufacturing and tremendous volume they can occupy in landfills. At BlackLightning we do not buy styrofoam peanuts or any other type of new styrofoam packing material. We do receive a large number of these little pink and white puffs from customers and from our suppliers who package cartridges and other products with them. Once they have been manufactured, the peanuts themselves are harmless and inert. Still, they pose a disposal issue. We are always looking for ways to reuse and recycle. The less that goes to the landfill the better. So the peanuts had created a sizable pile heading to the rafters of our warehouse while we wrestle with what to do with them.

Ah... but we have a plan. Walter Jeffries, president of BlackLightning, will be insulating his 1803 farm house by adding an outer wall around the entire structure and filling the space with...a drum roll please... peanuts! Styrofoam is an excellent insulator and does not pack down over time like blown-in insulation. Originally he was going to buy blue-board, the commercial rigid foam insulation for houses but a look at the volume of peanuts and other styrofoam packing accumulating at BlackLightning gave him a better idea. Instead of adding to the landfill, this abundance of styrofoam will be used to create an energy efficient, cozy, homestead. The idea has already been put to the test in a garden hot frame over the past two years. The walls of the hot frame were insulated with fiberglass insulation in one section, and peanuts in the other. The temperatures in each section was measured during the winters and found to be comparable or better in the peanut section. So, if too much styrofoam packing has got you down, instead of spending the money on dump fees, send them to: The Peanut Project, c/o BlackLightning, Riddle Pond Road, West Topsham, VT 05086. We are now accepting styrofoam peanuts for the perfect reuse. (Sorry, we will not be able to pay for shipping costs). Note -- we will not use any new peanuts for our project. Only used peanuts need apply! We will be happy to

take the packing pieces to their final resting place. A place where they can once again be contributing members of our world and avoid polluting the environment.

Update: June 1992 - Since publishing Peanut Peanut in the June 1991 issue we have received thousands of cubic feet of styrofoam from individuals and companies across the country. The peanuts are being used to insulate the walls and roof of the farm house, and the new BlackLightning production facility which was completed in March of this year. The thick wall of waste styrofoam has found a new purpose in life and keeps us warm throughout the winter as we recycle your toner cartridges and develop other new and exciting laser printer and computer products.

We're not the only one's reusing peanuts. Garbage Magazine reported on a Pack & Ship company that accepts used peanuts for packaging and Mother Earth News had a tip from a reader who makes peanut pillows and bean-bag chairs.

We've already received millions of peanuts, but keep on sending them, there's still room for millions more! It's an alternative to the land fill, and wouldn't you rather pay shipping over land fill costs, and know that they'll be put to a positive use, and given a cozy home for their old age?

Send your used peanuts and styrofoam packing to:

Peanut Project, BlackLightning, Riddle Pond Road, West Topsham, VT 05086

#### Footnote:

We have received letters from a number of people interested in doing this same type of project. If you are interested in this, write us. At some point we'll collect the letters together and publish a list in The Flash to help match up people who have peanuts and people who want used peanuts.

#### A Burning Issue

A number of people have written the Peanut Project with concerns about fire. This is something we were also very concerned about. Prior to starting this we checked with Dow Chemical and other sources and found that when styrofoam (polystyrene) burns, it produces CO, CO<sub>2</sub>, and H<sub>2</sub>O. In other words, it is less toxic than burning wood, and much less toxic than burning carpets, paint, furniture, and other house hold items. We also did a burn test and found that the peanuts act just like regular housing insulation. That is to say, it shrinks away from heat and flames rather than exploding into flame. If you do a similar project, be sure to investigate everything yourself.

#### Black Hole Blacks

One user mentioned in passing to one of our sales people that they

had discovered a trick for making perfectly solid blacks beyond what is available even as BlackLightning Graphic toner. Apparently, graphic art stores have a spray that will dissolve the toner causing it to flow a little. The solvent then evaporates, leaving a rich, thick black behind that is perfect for camera work. What is this mystery spray? We don't know, yet. If you do, write The Flash and we'll share it with readers in a future issue.

#### IMPORTANT NOTICE TO PURCHASERS

The entire physical universe, including this product may one day collapse back into a infinitesimally small space. Should another universe subsequently reemerge, the existence of this product in that universe can not be guaranteed.

-- from The Funny Times.

#### A Walk in Vermont

If you have called recently and were on hold, you may have heard our on-hold "music", A Walk in Vermont, a symphony of birds, peepers, bullfrogs, streams, and other wildlife.. It was created in the woods, fields, and marshes around BlackLightning using an Outbound 2030/461 Notebook computer to record digitally at 22KHz using MacRecorder from Farallon. Then, back at our offices, we used SoundEdit 2.01 to mix the elements to give the illusion of walking and passing by the different points of interest. The resulting file, approximately 230 seconds long, was then converted to 11KHz compression (telephones only use 8KHz of bandwith) and is continuously played by an old MacPlus computer directly into a Panasonic KXT-61610 telephone switch for the best possible fidelity.

When we created it, we wanted something that would let you know you were on hold but not be intrusive while you waited. A Walk in Vermont appears to be a great success. Everyone loves it and we constantly get great comments from callers who say it was "wonderful", "relaxing", "reminded them of home", "brought back pleasant memories", and more. A couple of people have called up and asked specifically to be put on hold so they could show it to a co-worker or friend, and we've even had a half dozen offers from people who wanted to buy it!

We were surprised and pleased that it went over so well. We try and keep your stay on hold as short as possible, and A Walk in Vermont may make it a little more pleasant.

#### How to Save Water (without Dying of Thirst)

For some great tips on saving water in your household check out Turn Off the Tap by Randall D. Schultz. Water saving doesn't have to be painful, and this book will show you how to do it. Contact EcoTomes, 11024 Montgomery, Suite 311, Albuquerque, NM 87111,



(505) 294-8520.

#ENDCARD

#CARD

Chapter 6

Eclectia

There are a lot of articles in The Flash that fall into a category of "none of the above". Sometimes these are political. Sometimes they are product reports or techniques. Here are a few of the best from over the years...

#ENDCARD

#CARD

Chapter 6...

Fall, the leaves are changing, time for long walks and curling up with a good book. If you are looking for some non-fiction, check out the books we've been reading recently...

Databased Marketing - Herman Holtz, author of the best selling, How to Make Money with Your Micro, has a new book about using computers and databases for efficient modern marketing. The trick in any product push is to get your message across to the right people, tell them what they need to know about the product and, finally, give them a solution. The difficult part is doing this without going broke in the process. Big corporations can afford massive marketing and advertising blitzes. The rest of us need to get our message across while spending a limited amount of money and time. Database Marketing is about doing just that. Holtz explains, in layman's terms, techniques that use computer databases and profile targeting to get your message out to the right people. In the process, you can save money, conserve resources (less paper and junk mail!), and get your chance to make it big. This book is full of great information and ideas for anyone selling, marketing, or trying to develop their own product. It's filled with case studies and step-by-step guides to innovative marketing techniques like co-op mailing, promotion testing, customer modeling and profiling. A must for the budding entrepreneur. 300 Pages, ISBN: 0-471-55187-2 Price: \$34.95 Hard cover Publisher: John Wiley & Sons, Inc., 605 Third Ave, New York, NY 10158-0012.

137 Dollar Saving Secrets Your Phone Company Won't Tell You - Produced by the editors of TeleConnect Magazine, this little booklet could save you hundreds, or even thousands of dollars over the next year. It's filled with statistics like "Over 80% of all business phone bills are wrong and 80% of those are wrong in the the phone company's favor." And it doesn't stop there. They go on to explain

things you can do to save big bucks. Issues covered include getting the most bang for your buck by purchasing used telephone equipment, how to do it, and what to watch out for. Another important point discussed is how to deal with the phone company, how to know what they're thinking. If you like this booklet, get yourself a subscription to TeleConnect Magazine. We subscribe to several periodicals from this industry, and TeleConnect is the best. (No, you can't have our back issues!) 80 Pages, TeleConnect Magazine, 12 West 21st St, NY, NY 10010, Tel (212) 691-8215, Fax (212) 691-1191.

Your Mac Can Do That! - Written by Christian Boyce, publisher of the Mac News newsletter, this book proports to help you "Add sizzle to your system, Work with the most popular Macintosh programs, Pump up your Macintosh muscle with the best hardware add-ons, Seek and destroy uncool Mac problems, and to Rid yourself of poor Mac self-esteem" That's a pretty strong claim, and for the most part Boyce makes good on it . Written in a friendly, easy to follow manner, this book makes great use of pictures, screen shots, and lots of side comments that explain little tricks of the trade that will make you and your Mac more productive. The only problem I had with the book has to do with layout and the ubiquitous use of light blue arrows all over the place for no apparent reason. Rather distracting. Still, the content is excellent. If you are a beginning Macintosh user, or never got past your word processor or accounting package, then get this book and read it. It will open up whole new vistas for you. And, yes, your Mac can do that, and so can you! 348 Pages, ISBN 0-672-48531-1 Price: \$24.95 Soft cover Publisher: Hayden Books, 11711 N. College Ave. Carmel, IN 46032, Tel (317) 573-6880, Fax (317) 571-3484.

Beyond The Limits - In this compelling sequel to The Limits to Growth, Donnella Meadows, Dennis Meadows, and Jørgen Randers explore what has happened to the world environment in the past 20 years since their original computer models predicted many of the problems we now face. Their writing and theories are both discouraging and encouraging at once. They point out many of the problems that they had originally predicted, as well as those that they didn't. Social and environmental conditions and disasters resulting from misgrowth that are adversely affecting our world and societies as a whole. But they don't stop there as do many other criers of doom. The encouragement comes from the solutions they and their computer models project for a sustainable future. Just as our society is entering an information age, we have the chance to change our growth to non-destructive patterns that allow continued economic expansion without the substantial environmental damage of the past, and who knows, perhaps even repair the damage done in past decades and generations. A brighter future is possible with a time for planetary healing. 300 Pages, ISBN: 0-930031-55-5 Price: \$19.95 Hard Cover Publisher: Chelsea Green Publishing Company,

Route 113, PO Box 130, Post Mills, VT 05058-0130, Tel 1-800-639-4099, (802) 333-9073, Fax (802) 333-9092.

Have you just written a great book? Send a copy to The Flash; we'll consider it for review in an upcoming Book Nook!

### Teaching Priorities

In school they seem to be having some difficulty teaching the three R's: Reading, Writing, and Arithmetic. Perhaps we need to take a different approach and start by teaching the other three R's: Respect, Responsibility, and Appreciation. -T. FABLE

#ENDCARD

#CARD

Chapter 6...

### Book Nook Home & Office

#### Energy Savings

By Donella Meadows

One mature tree on the south side of your house provides as much summer cooling as five mid-sized air-conditioners. A single open fireplace damper sends 8 percent of your heating bill up the chimney.

The television sets of the United States collectively draw the power equivalent of a Chernobyl-sized nuclear plant when they are turned off. This power allows them to be turned on instantly so we don't have to wait a minute or two for our screens to warm up.

These facts and many more are contained in a small book called Practical Home Energy Savings. It's a guide to reducing your energy costs by a lot, while protecting the environment and preventing the next war in the Middle East. It also contains some great nuggets for dinner party conversations.

The United States has 5 percent of the world's population and uses 23 percent of the world's energy. The "efficiency dividend" could be bigger than the "peace dividend." Poor insulation, inefficient appliances, drafty doors and other fixable faults cost U.S. consumers more than \$300 billion per year - more than the military budget.

Superinsulation windows let in more heat than they let out, even on the north side of the house. These windows outperform the best insulated wall because they both conserve furnace heat and gather solar energy. If everyone in the frost belt installed them, the nation would save as much oil as we now get from Alaska. We ought to do that not only to stop more oil spills, but because oil production in Alaska has peaked and is steadily declining.

Beyond listing jazzy facts, the book lists what you can do to save energy, starting with what can make the biggest difference fastest and cheapest. First, it says, stop drafts. The average U.S. house has a total of five square feet of holes through which air leaks. These leaks increase the average heating and cooling bill by 30 to 40 percent.

Begin, says the book, with the holes a cat could crawl through. It tells you where you are likely to find them and how to eliminate them.

Step two is insulate. Step three: Get efficient about hot water. For example, run your shower into a gallon container. If it takes less than 24 seconds to fill, you need a water-efficient shower head. If your family takes an average number of showers, the low-flow head will pay for itself in smaller hot-water bills within four months and earn you a profit after that.

Step four: Install windows that separate heat from cold (the book tells you where to find them).

Step five: Buy efficient appliances.

Consider refrigerators. Between 1950 and 1975,

For warming small amounts of food, a microwave oven can save a third of the power of a conventional electric stove. But you waste energy twice over if you use the microwave to thaw frozen foods.

Plan ahead. Let food thaw in the refrigerator. You'll not only save heating energy, you'll also reduce the load on your refrigerator motor.

Color computer monitors use twice as much energy as black and white ones. It does not make sense in either energy or disk-saving terms to leave a computer on when you're not using it.

Compact fluorescent light bulbs, which are two to three times more efficient than regular bulbs, come near the bottom of the home energy-saving list. Lighting is a big energy user in the economy as a whole; it takes 20 percent of all the electricity used in the United States. Some 50 to 90 percent of that energy could be saved without cutting down on illumination. Most lighting is used in the commercial industrial sector. Lights account for only 10 to 13 percent of home electricity consumption.

But compact fluorescent bulbs can save money in the home, too, especially where lights are on at least four hours a day. Over its lifetime, one bulb will save \$40 in electric bills and \$5 to \$10 in replacement costs, and it will save the Earth a ton of carbon dioxide and 20 pounds of sulfur dioxide from a coal-burning electric plant, or 1.25 barrels of oil from an oil-burning plant (enough to run an average car 1,000 miles), or half a curie of high-level radioactive waste from a nuclear plant.

Because of the energy savings already practiced by Americans, the nation's annual energy bill is about \$150 billion less than it would have been. If we were as efficient as West Europe and Japan, we could save \$200 billion a year more - \$800 for every man, woman and child in the country. And, says this book, it's possible to do even better than that.

Practical Home Energy Savings is available for \$8 postpaid from:

Rocky Mountain Institute

1739 Snowmass Creek Rd

Snowmass, CO, 81654-9199

#ENDCARD

#TAG C6S2P1.pct

#CARD

Chapter 6...

Craft Corner

Making Rubber Stamps

By Holly Blumenthal

There are a lot of cool things you can do with your laser printer besides printing business letters and annual reports. LaserColor metallic foils, color print toners and colorful iron-on transfer toner (for printing on t-shirts, hats, fabrics, metals, and ceramic mugs), top the list of old favorites. The latest addition to our grab bag of laser fun is a Polly Stamp machine from Grantham's of East Grand Forks, Minnesota.

The Grantham Polly Stamp system takes the text and graphics from a laser printer and creates colorful self-inking or block-style rubber stamps. It's a blast, and you could even develop an at-home business around it: desktop publishing rubber stamps! In a nutshell, you design an image on your computer screen using a word processor, drawing program, or what have you. The final image can have several different stamps arranged on the 4 1/2 x 9 inch area available. Print a negative of the image on two separate transparencies along with registration marks. Align the images via the registration marks, add goop, and expose it to intense ultraviolet light (in a sealed, light tight box) . Presto, the goop, a light sensitive resin, hardens in the areas exposed to the ultra-violet. After cleaning up the flexible rubber stamps, trim off any excess rubber and attach the stamp to the plate of a self-inking stamper or wood block. Ta-daaa, your computer graphics are now ready to apply to any flat surface including envelopes, invoices, stationary, wall board, wrapping paper, your forehead... you name it!

#ENDCARD

#TAG C6S2P2.pct

#CARD

Chapter 6...

It is possible to make good stamps with the first try, but, as with any craft, understanding and experience will be certain allies in working with the Grantham Polly Stamp system. The stamps can not mimic the detail that is possible with a laser printer. The rubber material has limitations in terms of point size and line width that will produce a good stamp impression. There is also a skill to determining the amount of exposure that will create a base that is not too thin and not too thick. A thick base does not leave enough relief between the image and the background. If the base is too thin, it will not support the fine details. Grantham's manual provides helpful basic guidelines about these issues for successful first attempts and making a few

stamps that don't work well is surely a good way to learn about the possibilities and test the boundaries.

We recently used the Grantham Polly Stamp to create a variety of self inking stamps for BlackLightning. Previously we had sent out for rubber stamps of our address, check endorsements, and special things like First Class or Book Rate mailing stamps. The only frustration we ran across was with the self-inking stampers. We were stamping hundreds of pieces of literature, and it seemed that the stamper pads frequently needed re-inking, which was a bit of a bother. This may not be as much of an issue for those who are only using the stamp for a few things a day, but the next time around, we will probably go for the simple, old fashioned, wood block stamp and a stamp pad. For our needs, it seems that simplicity works best. An advantage to the old fashioned block stamp is you can easily change colors by simply getting another color ink pad.

#ENDCARD

#TAG C6S2P3.pct

#CARD

Chapter 6...

If you only need a few stamps then the Polly Stamp, like any significant piece of equipment at \$595, is not an economical buy. But if you need a lot of stamps, want to start a new service, or just want to have fun, then the Polly Stamp machine is a great laser printer accessory! Grantham has two packages available. Both have the machine and all the materials needed to get started. The first is a new Polly stamp exposure unit with starter package for \$965. The second deal is the same equipment and supplies except that the Polly stamp exposure unit is refurbished, not new, and the package price is only \$595. (Both prices quoted include shipping.)

#ENDCARD

#TAG

#CARD

Chapter 6...

There are certainly all kinds of fun possibilities with this stamp making system and the cost would be a minor investment for a new business venture or an adjunct to an existing business. The machine and process take very little room, it can all be done at a small kitchen table. The stamp making could be nice diversification for a wide range of established businesses including desktop publishers, graphic artists, specialty shops, custom print shops, general stores and mail order businesses. The venture could also include products made with stamps. Stationary and wrapping paper decorated with stamps have a particularly charming style. Stamps might be designed and made in-house for standard stock as well as offering customized stamp making. It seems that most of the time, when you are looking to have a custom stamp made, it is limited to text only. When putting

your computer and laser printer together with the tools like a stamp maker, imagination is your only limitation!

For more information contact:

Grantham's Polly Stamp  
418 Central Avenue NE  
East Grand Forks, MN 56721  
Tel. (218) 773-0331  
Reader Response Number 2

#### Wired Wires

Toner streaking can be frustrating. Usually it is simply a dirty cartridge corona wire. The corona wire is below the black film which covers the slot in the cartridge. Don't increase your frustration by cleaning the film which is there simply to protect the cartridge from light. Be sure to insert the corona wire cleaning tool past the film so that it fits snugly against the cartridge and is cleaning the wire hidden below.

Be sure not to clean any other part of your laser printer, or anything else, with the corona wire cleaning pad as this will get it dirty such that when you go to clean the cartridge corona wire you just make matters worse. Vacuum the pad to clean it.

#ENDCARD

#CARD

Chapter 6...

#### Check It Out!

##### History of the Common Check

By Mark Williams

We all take it for granted now, but prior to the 1950's, checks were a convenience afforded to only a small percentage of bank customers. Most people used banks for savings and paid for goods and services with cash. People bought locally and purchased money orders when making the rare payments by mail.

As the country grew and individuals prospered, people moved away from small towns and started purchasing goods further from home. As a result of these dramatic societal changes, checking accounts became a logical convenience for an increasing number of people. The banks had to adapt to meet this new demand.

As the number of checking accounts grew, banks began experiencing difficulties related to the number of checks they needed to process each month. Early attempts to streamline these bottle necks included "Sort-A-Matic" and "Top Tab Key Sort" manual check handling systems.

The Sort-A-Matic provided 100 metal or leather dividers numbered 00 through 99, each check to be sorted would then be placed into a corresponding divider based upon the first two numbers of the

account. This process was then repeated for the next two digits of the account number, etc. and when completed the checks would be sorted.

Checks using top tabs had small holes punched in the tabs to indicate the one's, ten's, hundred's, etc. digits. By placing a long metal "key" through the holes in the tabs, all the checks with a corresponding 100's, 200's, 300's, etc. could be pulled. Then this would be repeated for the 10's, 20's, etc., until all the checks were sorted. There was even a marketing controversy at the time concerning whether the holes should be round or square, with the square hole the ultimate victor.

Both were effective but, as you can imagine, quite slow. Later, mechanical sorting, using "punch card" style checks was developed. These were much improved but also costly to produce and not at all suited for the mass market because of the cost of punching the holes and the problem of damaged or obscured holes causing a misorting of the checks.

Fortunately, computers were beginning to move out of the laboratory and into business. Sorting and matching are tasks that computers do extremely well and therefore check processing seemed a natural application. Stanford University and Bank of America made the first successful attempts at further streamlining this process. Magnetic Ink Character Recognition, commonly known as MICR, was selected by the banking industry as the standard for machine processing checks.

This technology relies upon the interpretation of a unique magnetic wave form given off by characters printed with ink containing iron oxide. When checks are received at the bank to be processed, they are first put onto a track and pass through a magnetic field with each character receiving a magnetic charge. This is very much like a tape cassette being recorded. The magnetic ink retains this charge, allowing the read head, which comes next in line, to determine the character type, somewhat like data stored on a floppy disk, although less permanently. The reading is actually done based largely on character widths. Once the MICR standard was established, the check sorting bottle neck was resolved, and banks could market checking accounts to all of their customers. Very quickly thereafter, this banking service saw dramatic growth as consumers and businesses alike took advantage of the new, safe, and cost effective way of paying the bills.

Production of checks became more specialized with the new MICR standards. Specialists improved production methods by producing multiple orders from a single plate. This is termed multiple-up or ganging, and provides an amortization of the high setup costs associated with traditional wet ink printing.

As PC's became more common and affordable, and software improved, computer users have automated many mundane tasks, including check writing for small business and home users as well as



major corporations. Add special computer checks to the check printer's menu. Printing these short runs using traditional production methods (plate preparation, press wash-ups, color and MICR ink mixing, paper loading...) means high set up costs. And unfortunately for the small business and home computer user, this makes the price of software compatible checks relatively high and neither the check vendor nor the software developer is motivated to find a less costly method of delivery as they often bundle their services together, requiring the software user to buy, 'official' forms and checks from just one source.

Fortunately, electronic publishing and non-impact printing technologies have become available in the specialized areas of MICR printing. New, very fast, non-impact printing systems can produce MICR documents. Being computer controlled, most of the traditional MICR printer's setup costs are eliminated and no stock is wasted when changing jobs. These savings can be passed on to the end user, resulting in computer check pricing comparable to personal check costs. Now, very small businesses and individuals may enjoy the convenience, accuracy and professional image of printing their checks with their computer's printer but not pay the high prices of the past.

Proponents of electronic bill paying have been saying the check is dead for almost 20 years. While they might ultimately be right, the banking industry has pushed Electronic Funds Transfer (EFT), Automated Clearing House (ACH) and Debit Cards for years and have had little success. Considering the flexibility and control individuals and organizations have when using checks, and the huge investment the banking system has in MICR processing equipment, it is reasonable to conclude that the check is going to be around for a long time to come.

Mark Williams is from COMPUCHECKS USA. A software compatible computer check vendor providing state-of-the-art checks in small quantities at affordable prices. For information call 1-800-798-4452.

#ENDCARD

#CARD

Chapter 6...

Make Your Own & Save \$\$

By Les Cseh

In these tough economic times we all need to cut costs and improve productivity. Firms of all types and sizes have found that they can save time and money by printing their own checks. In the last issue of The Flash Mark Williams brought us up to the present with his article Check It Out about the history of checks. New products now allow an entire check to be printed at your business, including the logo, signatures, and the MICR (Magnetic Ink Character Recognition)

encoding. Lets now look at how you can do it yourself, what you need and what you need to know before investing in these products.

MICR, pronounced either 'my-ker' or 'micker', are the unusual characters at the bottom of checks. These characters encode the account number, bank transit and check numbers. When properly prepared, checks with MICR encoding can be processed automatically by the bank's equipment costing the bank very little per check. When a check cannot be processed automatically, it costs the bank \$6.00 to process it manually.

Although not difficult to use, the technology is poorly understood. The result is considerable misinformation, and a growing problem for the banks. Therefore, it is important that anyone planning to use these products realize that there is some education required, there are regulations that need to be followed, and that there is a need for ongoing quality control.

Why bother printing your own MICR characters? The best starting point is to picture your current check production process. If you or your staff are hand-writing checks, then you know how time-consuming and non-productive this task is.

Many firms use a computer to generate and track checks, printing them on a computer printer. Every time you have checks to print, there may be several steps involved: the current forms must be removed from the printer; check forms retrieved from storage; checks loaded into the printer; alignment tested and adjusted as required; checks printed; checks removed from the printer and stored; normal forms loaded; checks burst/separated; checks signed. Now picture that you have several accounts to manage. Depending on the type of business (eg. payroll service, property management), some companies have 30, 50 and even 100 accounts. Imagine the office space tied up just storing check forms!

The more accounts and/or the higher your check volume, the worse it gets. In addition, you have to keep track of how many checks you have in stock, as the lead time for check forms can be weeks (bad news if you've run out early!). Add to this the fact that check forms have been historically very expensive, a trend which is changing. A laser printer check printing system can overcome most, if not all of these problems. To start with, check forms designed for laser printers tend to be much less expensive than those for impact printers (dot matrix and daisywheel). A single check form can be used for all accounts by delegating the printing of company information (logo, name, address), bank information (name, address, routing) and MICR encoding to the laser printer. These systems offer additional benefits as well. One popular feature allows the laser printer to sign checks for you. If this concept makes you nervous, bear in mind that the software will allow you to specify that the automatic signature(s) should only appear for checks less than some amount determined by you. There is also the option of the security cartridge mentioned below. Another accounting advantage is that the

laser printer can MICR encode the check number produced by your accounting software so that the check numbers will appear on your bank statement, simplifying bank reconciliation. Also, you don't have to throw out expensive unused checks whenever you change banks or bank accounts, or move. No more four to six week lead times for your checks to be printed.

MICR capable laser printing systems have the following in common: Laser Printer. Not every laser printer can be used for MICR printing. MICR toner from a reputable source must be available, and a MICR font should have been specifically designed for the printer. In addition, its paper handling needs to be very accurate, especially that it not "skew" or tilt the paper. "Curl" is an enemy of the bank's check processing equipment - therefore, the fewer curves in the printer's paper path, the better.

MICR font. The font must not only be visually accurate, but magnetically accurate as well. This means that the font must be designed for the specific combination of laser printer engine and configuration (for example, print smoothing features like HP's RET), toner and paper.

MICR toner. Normal toner can not be used; it does not have the proper magnetic characteristics. Printers using toner cartridges (such as the HP LaserJet and Apple LaserWriter) allow you the option of switching between MICR toner for checks and normal toner for other applications.

Security Cartridge. A cartridge containing the MICR font, logos and signatures. When the cartridge is inserted in the printer, checks can be printed; when it is removed, the printer can still be used for office applications, but not for checks. Some vendors store this sensitive information on the computer rather than a cartridge. This is fine for some, but it may be too much of a security compromise and inconvenience for others.

Check Stock. The paper must be carefully selected to match both the bank and laser printer specifications. The specifications cover the materials, inks, colors, reflective and structural criteria, perforations and more. The design should be very general to avoid obsolescence. In addition, the design should incorporate the use of preprinted security features which will deter all but the most serious counterfeiter. Although you could use a completely blank check stock, we do not recommend it: it is risky and the additional toner required will probably defeat any savings.

Quality Control. It is vital that anyone involved in producing checks have an ongoing quality control program in place. At the very least, a thorough visual inspection should be carried out at the start of the check run, and preferably during and at the end of the run as well. The simplest part of the inspection is to ensure that the print quality is excellent. MICR alignment and position is easily inspected using a special MICR "template".

Thorough visual inspection should catch 95% of all problems that

could occur on a good system. However, it will not catch problems with the magnetic quality of the printing. Be sure that the vendor offers magnetic check testers, and/or a check testing service.

Software. The best scenario is for your accounting/financial application to directly support the specific laser check printing system you intend to use. However, since few accounting systems fall into this category, 3rd-party check-printing software is designed to pick up check output from your accounting software and rework it for laser/MICR printing. MICR check software is available to work with most micro- (DOS, Windows, Macintosh, etc.), mini- and mainframe computer systems.

Vendor selection for your check printing system is critical. The components must be carefully matched, and the company behind the products must understand the technology, the issues and the standards. Has the vendor invested in a MICR analysis system? Do they offer all of the required pieces, and if not, how can they assure that their piece will work properly with the others, now and in the future? Your vendor should have worked with the financial institutions in the development and testing of their products.

Laser printers have proved their suitability to the task of check writing. Many organizations have freed up considerable time and money that used to be wasted in the production of checks. With time, technology keeps improving and giving us more time.

Les Cseh is Managing Director for CHEQsys, a firm specializing in complete check-writing and check-printing solutions. CHEQsys may be reached by telephone at (416) 475-4121 and by e-mail on CompuServe at [76424,2075].

Zip-a-de-do-da

We now use Zip Lock foil bags for all cartridges. They're reusable so be sure to send them back with your order. If one you are using for a transfer cartridge develops a hole, just cover the hole with tape.

#ENDCARD

#CARD

Chapter 6...

Paper Facts

by Barbara Brooks of BlackLightning  
from The Flash, volume 1, issue 2

When a customer asked for information on paper products, I thought it would be a piece of cake. After much research, I have realized that there's a lot more to paper than meets the eye.

This article is designed to help you make the best paper buying decisions to serve your different laser printing and photocopying

needs. There are limitations on the types of paper photocopiers and laser printers can handle, refer to your manual for the specifications of your machine.

Be wary of extremely smooth or shiny papers, or those that are high-textured, which are not laser printer compatible. Paper with special coatings may also give you problems. Letterhead that uses low temperature dye or thermography, may transfer onto the fuser roller, smear, and cause damage. Any preprinted paper should have inks that can stand temperatures of 200°-400° for 0.2 seconds. Never try to send paper with surface characteristics or irregularities such as staples, tabs, or wrinkles, through your machine. Carbonless paper or multi-part forms won't work either. The paper path of a laser printer is tight, and the use of very light or heavy paper can cause jamming.

Let's start with a glossary of paper terms you should be aware of when contacting sales people and dealers for the right paper for your machine.

Bond is 100% chemical wood pulp and/or cotton, with an ash content of less than 10%. Papers should not contain large amounts of clay or talc, which can damage the laser printer through abrasion.

Brightness describes the whiteness of the paper. 81 is a basic paper for general in-house use. Use it when economy is an important factor in your printing. A brightness level of 84 would be a mid-range paper for a more professional, yet informal look. 86.5 will give that crisp, snappy look for more important documents.

Electrical Properties are the ability of a sheet of paper to hold or release an electrical charge. This is very important in any type of copying. The paper can't be too conductive, or the toner will not be attracted to it. On the other hand, if the sheet is too resistant, static cling, feeding and jamming problems will occur.

Moisture Content is very important because of paper curl and static build-up. The wrong moisture levels can cause the laser printer to jam due to paper curl, static build-up and wavy edges. Changes in electrical properties produce light spots. To ensure the proper moisture content, store paper in a clean dry area that will not be subject to dampness. If high humidity is a problem in your geographical area, try storing the paper with a dehumidifying substance such as dessicant.

Opacity refers to the amount of show through a paper has. High opacity is important when printing on both sides of the page.

Paper Curl is a critical factor for top machine performance. Paper should be basically unreactive and flat, although a certain amount of built-in curl is necessary to counteract the excessive heat and pressure of the fusing process.

Surface Characteristics of paper predict the outcome of the printed page. Smoother paper produces less wear on your laser printer, and a higher quality image will result. The best finish is one that is free of dust and dirt and isn't too abrasive. A certain amount of surface

friction is necessary for satisfactory feeding. Card stock, a much heavier paper, has a rough surface and will not run through laser printers very well. Because of the roughness, toner may not stick to this surface evenly.

Always fan the paper before placing it in the tray. This allows air between each sheet and helps eliminate blank pages and paper jams. Position paper in the tray as indicated on the ream label, or you may have difficulty in printing, regardless of paper quality.

The best quality paper for use with laser printers, has a clean surface, a high opacity, and a brightness level of about 84. A 70-pound smooth opaque from Simpson, Dello Opaque English Finish from James River Corp., LaserPlus from Hammermill, and Simpson's Watermark, are all excellent examples.

The paper selected for most of the general printing at BlackLightning is Hammermill Tidal DP, a high quality paper at a bargain price. This paper is for use in xerographic copiers, offset duplicators, and laser printers. Tidal DP is lightweight, has a clean, smooth surface and a basic paper brightness of 81. This lightweight paper is ideal for use in multi-sheet mailings, but the opacity is not high enough for double sided printing. Xerox 4024 and Canon NP are very similar papers.

Top-of-the-line paper for desk top publishing is specially designed for quality copies on the new high-resolution laser printers. This paper allows the user to produce camera-ready copy directly from the laser printer. The bottom side is specially treated to prevent wax bleed through when waxing in preparation for paste-up. You might consider using James River's LaserUltra, Hammermill's LaserPrint or LaserPlus, or LaserBond by Boise Cascade for this purpose. One drawback of coated paper is the increased chance of the toner rubbing off. This can be prevented, however, by spraying the finished page with a thin coat of clear artist's fixative.

A wide variety of colored paper is available for use. Apply the same standards to colored paper as you would any other paper. With a little experimentation and imagination, the results can be beautiful. Customers find our brown toner is elegant on cream colored paper and likewise with our blue toner on light blue paper. Bi-colored paper, such as Intergraphix QuickColor and James River's Pro-Tech, is available to easily make brochures and pamphlets.

Another paper product of interest is transparencies. Avery's transparencies for desktop laser printers, are paper-backed for better feeding and easy proofing. 3-M's Type-501 transparency film gives a very good performance but, because of the high fuser roller temperature, Type-503 will melt in your laser printer.

If you want to laser print labels and have been warned not to, rest assured -- there are labels suitable for your needs. Avery has introduced labels specifically designed for laser printers. They won't melt or peel, they go through the machine beautifully and the adhesive adheres immediately. Dennison also manufactures laser printer labels that work in machines that have up to a 20-copy-per-

minute capacity. After testing this product, however, we found that once the labels are put on an envelope or postcard, they have a tendency to peel off rather easily and are more prone to jamming. When printing on envelopes, be aware that those with five layers in the middle, where the folds meet, may not print very well in your printer. This is due to too many thicknesses of paper going through the printer at once. When trying to print on the front of the envelope, the type may come out light on one side and dark on the other. Envelopes that have only two thicknesses in the back are better for use with laser printers. We have found it is cheaper and more expedient to have our envelopes made up at a printer and use labels for addressing.

At BlackLightning we recycle everything from your cartridges to paper to soda cans. We thought some information on recycled paper would round out this column. EarthRight, a Vermont company promoting recycling, stocks 70% recycled white bond paper available by the ream or by the case. For more information call (802) 295-7734 or (802) 649-1008. In Massachusetts, Recycled Paper Company has 20-pound bond that has an 81 brightness. This paper is 60%-plus recycled and is available in a minimum order of 2 cases. Free samples and catalogs are available by calling (617) 227-9901. Earthcare Paper, Wisconsin, is a rapidly growing company that offers everything from recycled paper to gift wrap. They have a 20-pound bond, for duplication and high speed copiers that has a 50-70% recycled content. They offer a free catalog and samples and also have volume discounts. Reach them at (608) 256-5522. The laser printer is a powerful tool, and combined with the right supply of paper, the output can be very impressive.

#### Fax Fact

According to one report, businesses use over 300,000,000 rolls of fax paper a year. That's enough to go from earth to moon over 26 times! If everyone stopped using fax cover sheets it would save 4 million miles of unrecycleable fax paper without slowing or harming business at all. Think about it and act! You can make a difference!

#ENDCARD

#CARD

Chapter 6...

#### Negative Images

##### Making Film Negatives & Positives

by Rodney Grantham of Grantham Printing  
new in The Flash Compendium

Have you ever needed a film negative or positive? Say for shooting silkscreens or making rubber stamps? Or just as a transparency for

overhead projection. Maybe you sought out a printer with a process camera. Or, you tried to do it on your laser printer or copier, but couldn't get a dark enough image.

If you have a laser printer, or even a copier, there is no reason you can't make them yourself. A material available in most office supply stores, intended for use in over head projectors is called Transparency Film for Laser Printers. (Be sure to get the kind for laser printers so it won't melt in the printer's hot fuser roller assembly!)

These work, and you can easily print on them with your laser printer, but there is one big problem. The fly in the ointment is there is just not enough density. Toner just isn't black enough to mask the light completely so you get greys. The reason for this two fold: First, the transparency doesn't have quite the proper static electric properties to take enough toner off of the imaging drum. Second, when light is passing through the toner from behind, the toner is not dense enough, even with the densest graphic toners, to completely mask the transmitted light. This results in a grey image.

The trick? Place two transparencies together in register with each other. When aligned, the additive effect of the two layers of toner becomes dark enough for almost any shoot. Pretty simple!

To make a negative, start by drawing a black rectangle to size. Use white letters or artwork in the box so they appear clear on the transparency. To get two pieces of transparency film to register, draw a small oval on top and bottom outside the black rectangle. It is much easier to align thin black lines on a clear background. If you cut the top transparency an inch smaller than the bottom, after printing, then they can easily be taped together. A line thickness for ovals should be very thin, .003 if possible. A sheet of white paper under the transparencies will make the task of aligning them easier. Rodney Grantham is a graphic artist and printing services designer who has developed a low cost machine for making rubber stamps from laser printer negatives. He can be reached at (218) 773-0331.

#ENDCARD

#CARD

Chapter 6...

Patent Pandemonium

by Walter & John Jeffries of BlackLightning  
with the League for Programing Freedom  
from The Flash volume 4, issue 1

A change in U.S. patent policy in the early 1980's allowed, for the first time, a patent to be issued for an element of software. The result has been a flood of patent applications based on techniques that have been the common knowledge of competent programmers



for many years. Many such patents have been granted, and the rate is accelerating. These absurd patents and the consequential lawsuits will result in increased costs to the consumer, longer times to market and the stifling of small developers. Additionally, the suits generated by this practice of patenting common programming features would add a tremendous volume to the already overloaded court system. And who pays for this judicial rigmarole? The taxpayer. No one will be safe: computer software pervades every aspect of our modern life, from the telephone networks to the engine controls in our cars, from the interface software in your laser printer to the controller in your VCR, and, of course, all the programs that make your personal computer so handy. Software development and innovation thrive best in just the climate that has existed during the last few explosive decades. You can fight back and protect your future by taking action and writing your reps in Congress.

Traditionally, the only kinds of processes that could be patented were those for transforming matter (such as, for producing steel from iron). Many other activities which we would consider processes were entirely excluded from patents. This was called the 'subject matter' doctrine. The change in this policy rests on an extreme interpretation of a single 1981 Supreme Court decision: *Diamond vs Deihl*. The case concerned a process for curing rubber --- a transformation of matter. The issue at hand was whether the use of a computer program in the process was enough to render it unpatentable. The court ruled that it was not. The Patent Office took this narrow decision as a green light for unlimited patenting of software techniques, even for specific well-known and customary activities.

This situation is akin to patenting individual sentences in a book or a string of notes in a song. A strong analogy that fits this case very well is that of a symphony. The notes are like the computer instructions; these are available freely to everyone. In both cases the work is made up of a series of units (subroutines or measures) that produce the desired effect. The composer thinks up these units while writing the work, but cannot claim exclusive ownership of them. The work itself can be protected from wholesale copying with a copyright. Finally, the work is "played" on "hardware": a computer or an orchestra.

Until recently, patents were not used in the software field at all. Software developers copyrighted individual programs. Much like a composer would copyright a piece of music. Copyrights cover the unique implementation of details (ie. notes, rhythms and dynamics) to create a particular program. This copyrighting of entire software programs allowed for the development of standards such as the character set used by almost all computers (ASCII) which allows programmers to communicate easily between different computer programs. To try and claim as your own the features of the program or the general methods used, would be like claiming that no one else

can use a phrase or sentence that you just wrote. New literature and music would quickly cease to be written.

The framers of the United States Constitution established the patent system to provide an incentive for inventors to share their ideas with the general public and "promote the progress of science and the useful arts." In exchange for divulging an invention, the patent grants the inventor a 17 year monopoly on its use. Independent reinvention of the same technique does not give another person the right to use it. This policy implicitly assumes that inventions are rare and precious, since only in those circumstances is the patent beneficial. Commonplace things, like the stringing together of words or notes, are not patentable. If they were, we would not be able to communicate. Thus, the basic question at issue is whether software patents, supposedly a method of encouraging software progress, will truly do so; or will it retard progress instead, and impede communication among programmers?

Software techniques are not 'rare and precious'; rather, the field of software is one of constant reinvention. As some people say, programmers throw away more 'inventions' each week than other engineers develop in a lifetime. And the comparative ease of designing large software systems makes it easy for many people to do work in the field. A software designer solves many problems in developing each program. These solutions are likely to be reinvented frequently as other programmers tackle similar problems or even very different ones. If a technique will be reinvented frequently and easily, there is no need to encourage people to reinvent or disclose it. It has been said that this constant reinvention is a waste of programmers' time. This is simply not true. The solutions and techniques that are being "reinvented" are so simple and obvious that it is more cost effective for the programmer to spend a little time thinking about the problem than to find it in some obscure journal or patent reference. The sheer quantity of "inventions" would make such a search impractical.

The Patent Office and the courts have had a difficult time with computer software. They must determine if the techniques represented are widely known or obvious --- either of which are grounds for rejection. This is critical because the granting of a patent carries a presumption that the patent is valid. Patents granted for techniques that were both well-known and obvious at the time of the application have been upheld by federal courts. Yet the Patent Office refused until recently to hire Computer Science graduates as examiners and the salaries offered are still not competitive. Patent examiners are often ill-prepared to evaluate software patent applications. Their task is made more difficult because many commonly-used software techniques do not appear in the scientific literature of computer science. Many techniques are too obvious to publish, others may be insufficiently general and some are simply open, public information.

Patents granted in the past decade for basic functions and features that were common knowledge, are now being used to attack companies who are selling programs they developed independently. Patent number 4,736,308 was granted for the specific use of two common techniques and Apple has been sued because the Hypercard program allegedly violates it. The patent covers displaying portions of two or more strings together on the screen --- ie. scrolling with multiple subwindows. Scrolling and subwindows are both well-known, widely used techniques; but combining them is now apparently illegal. Imagine if you were not allowed to use scrolling in your word processor while viewing multiple documents!

If this trend continues, new companies may be barred from the software arena --- most major software programs will require licenses from dozens of patents, and this will make them too expensive to develop and market. Patent searches are unreliable and in any case too expensive to use for software projects which involve hundreds or thousands of "patentable" parts. Since each patent search costs thousands of dollars, searching for all the possible points of danger could easily cost over a million dollars, far more than the cost of writing the program itself. Assuming the hurdle of the search is cleared, licensing may be prohibitively expensive, or even unavailable. Even reasonable license fees for several patents can add up to make a project infeasible. And after all that, a careful developer might find, after releasing a product, that it infringes on one or many patents not revealed in the patent search. Or, the programmer reading a particular patent, may not have believed that his program would violate that patent, where a federal court, unfamiliar with software, would rule otherwise. The resulting lawsuit and legal fees could force even a medium-sized company out of business. Consequently, it becomes necessary to involve patent attorneys at every phase of program development, increasing the cost to the consumer many fold. It is not hard to understand why this situation sounds an ominous death knell for the era of independent programming entrepreneurs developing new products in their spare time. We risk becoming a nation promoting lawsuits over innovation; a nation stifling creativity and change.

A software system is much easier to design than a hardware system containing the same number of components. For example, a program which contains tens of thousands of components and hundreds of thousands of lines of code, could be written by two good programmers in a year. The equipment needed costs under \$10,000; the only other cost is the programmers' own living expenses. Total investment --less than \$100,000. By contrast, an automobile which contains under 10,000 components, requires a large team and costs tens of millions of dollars to design. So, for car manufacturers, an extra million dealing with the patent system might be bearable. However, for the inexpensive programming project, the same extra cost is prohibitive. A new car may cost upwards of \$20,000. Imagine

if you had to pay that much for your word processing program and that much again for your spreadsheet or database!

Even if the Patent Office learns to understand software better, the mistakes it is making now will follow us into the next century, unless Congress or the Supreme Court intervenes to declare these patents void. You can help stop this practice by writing to Congress. Contacting your own representatives is good, but it may be even more effective to write to the subcommittees that consider such issues:

House Subcommittee on Intellectual Property  
2137 Rayburn Bldg  
Washington, DC 20515

Senate Subcommittee on Patents, Trademarks and Copyrights  
United States Senate  
Washington, DC 20510

To contact your representatives directly call:  
(202) 225-3121

or write to them using the following addresses:

Senator So and So  
United States Senate  
Washington, DC 20510

Representative Such and Such  
House of Representatives  
Washington, DC 20515

Another way to help the effort to eliminate software patents is to join the League for Programming Freedom. The League is a grass-roots organization of consumers and programmers opposing software patents and interface copyrights. (The League is not opposed to copyrights on individual programs.) Annual dues: \$42 for employed professionals, \$10.50 for students and \$21 for others. They appreciate activists, but members who cannot contribute their time are also welcome. To contact the League:

League for Programming Freedom  
1 Kendall Square #143 PO Box 9171  
Cambridge, MA 02139

(617) 243-4091

InterNet: [league@prep.ai.mit.edu](mailto:league@prep.ai.mit.edu)

Exempting software from the scope of patents will protect software developers from the insupportable cost of patent searches, the wasteful struggle to find a way clear of known patents, and the unavoidable danger of lawsuits. This in turn will keep prices affordable for the consumer and continue the flow of new, creative products. With rampant software patents, what is now an efficient creative activity will become prohibitively expensive.

To picture the effects, imagine if each square of pavement on the sidewalk had an owner, and pedestrians needed a license to step on it. Imagine the negotiations necessary to walk an entire block under this system. That is what writing a program will be like if software patents continue. The sparks of creativity and individualism that have driven the computer revolution will be snuffed out.

### Perfect Paper

If you are doing multi-pass or duplex printing, then you want the paper to stay as dimensionally stable and flat as possible from pass to pass. Water in the paper gets steamed out during the fusing process causing the paper to change size and to curl. This can result in paper jams and misregistration.

There are a number of tricks to getting the very best results. #1 - Leave the paper stored flat in its wrapper until you are ready to use it. #2 - Store your paper in a sealed, air-tight, vapor proof container (such as a tupperware or rubbermate storage bin) until you put it into the printer. Adding some desiccant packages will help (see page 215). #3 - Only put as much paper as you need right then, into the printer. #4 - Press the paper between two smooth surfaces between passes. #5 - The worst jamming and wrinkling of the paper is caused by the leading edge of the paper curling. Bending it flat, or slightly down, after the first pass helps a lot.

### High Yield vs Dense Blacks

There is a trade off between getting many pages from a cartridge, and getting the darkest possible graphics. Basically, you need to put more toner on the page to get darker graphics so the toner gets used up faster. You can adjust the density with the density control on your laser printer and the tabs on EP, PC, and EP-S toner cartridges. (See page 136) Furthermore, to get the absolutely best blacks, you should print one to five solid black priming pages prior to printing your work. This gets the blacks to their darkest but uses up toner faster.

### Square Screens

Jim Reppond from Kobe, Japan wrote us with a tip on getting the best photographic images from your laser printer. In the PhotoShop PageSetup dialog he chooses "Use Accurate Screens" and "Square" shaped screens. This same trick can be used with PhotoStyler on the PC and many other programs that let you adjust the lines per inch and other screen parameters. Beware that the "Accurate Screens" are a feature of Adobe PostScript Level II and may not be available in printers using other printer description languages.

#ENDCARD

#CARD

Chapter 6...

## Toner Resists Update

### Matte Plaques & Printed Circuit Boards

by Walter & John Jeffries of BlackLightning  
new in the Flash Compendium

Back in issue 4.1 we talked about creating printed circuit boards with the aid of laser printers. We had originally developed this technique back in 1989 at the urging of several customers including people at the University of Fairbanks in Alaska and in Canada. Obviously, this was a technique with a wide appeal. Since then we've used it for a number of other types of projects. This article is an update on this very simple process and its applications.

Toner is made primarily of a plastic resin that is resistant to the etching effects of acids commonly used for manufacturing printed circuit boards. By laying a pattern of toner down on top of the copper clad surface of a printed circuit board, you can create a pattern of copper that will remain after the etching process has been completed by dipping the board in an acid solution. The advantages of using toner directly are two fold: It is more environmentally friendly than the many toxic chemicals used for photoresists, and it is faster so you save time and money. This same technique can be used for creating plaques and signs. Lets look first at the printed circuit boards.

The main hurdle we had to overcome was getting the toner to release from the sheet of paper and adhere to the metal of the circuit board. Using bond paper or transparencies we were able to get sporadic success, but there were often breaks in the circuit board patterns making them unacceptable. In the fall of '91 we finally stumbled across a solution that worked perfectly almost every time. Instead of printing on paper, we printed on the peeled backing sheets of Avery/Dennison labels. When the labels are removed they reveal a very slick surface that the toner will adhere to lightly but fully release from when heated and pressed onto a fully cleaned circuit board. Etch it, and Voila!, one circuit board, ready for populating with components.

The reason this works is that the surface of the label backing paper is just slick enough so the toner easily releases from it when you press on to the printed circuit board, but not so slick that the toner falls off. You could probably make your own release paper by coating it with a very thin layer of silicon oil or some other material. This is something we'll be trying ourselves at some point.

The tricks here are to:

- Completely clean the copper surface with acetone or something that will remove any oils,
- Pre-etch to board or rough it up with a fine steel wool so it is a

little rough and will grab the toner better,

- Print your image in mirror image on the label side of a full page Avery label backing sheet after having removed the adhesive label paper,
- Pre-heat a t-shirt heat press up to 400°F. We have also used a household iron with reasonable results. A dry mount press might also work.
- Place the circuit board in the heat press, copper side up, and the page on top of the copper, image side down,
- Press it for 40 seconds to fully bond the toner to the copper,
- Let it cool some, but not all the way, say 30 seconds to a minute, and lift off the backing paper, leaving the toner on the copper,
- Etch as usual in an acid bath.

Note that the toner will spread a little during the heating process so your lines should start out a little thinner than you want them to be.

Other tips: Graphic toner works best, get an Emerald drum, if you can, for the best density and even fills, a t-shirt heat press works better than a household iron, a dry mount press might work. The Avery paper has worked perfectly for us, the key seems to be the silicon oil used to make the paper slick. You might be able to make your own sheets by spraying them with silicon oil. No guarantees. Lastly, In the spring we received samples from two companies who are producing a special paper that may work as well. They are listed below.

This same technique can be used for creating plaques (try doing a negative image so the letters are etched in, or a positive image so the letters are raised), and for making signs for displays on flat PVC signage board. Combine that with transfer toner and LaserColor for adding color and let your creativity run wild.

#### Sources

Be sure to tell them you read about it in the Flash Compendium.  
Use the Reader Response Card to easily get more information.

Baumwell Graphics                \$10 for 10  
450 West 31 St  
New York, NY 10001  
(212) 868-3340  
(212) 689-3386 Fax  
Reader Response Number 18

Toner Transfer System           \$9.95 for 5  
DynaArt Designs  
3535 Stillmeadow Lane  
Lancaster, CA 93536  
(805) 943-4746  
Reader Response Number 19

To use the Reader Response Numbers (RR#) simply circle the RR# on the enclosed Reader Response Card and mail it to us at: The Flash, Riddle Pond Road, West Topsham, VT 05086 or fax it to us at (802) 439-6463.

#ENDCARD

#CARD

Chapter 6...

More Laser

PCBs & Decals

By Karl Lunt

Finally, someone got it right. A new product from DynaArt Designs allows you to transfer etch-resist patterns directly to blank PC boards, using output from either a laser printer or photocopier. As a bonus, you can also use your artwork to make custom decals.

The toner used in laser printers and photocopiers makes excellent PCB etch resist, if you can just get the toner transferred to the blank copper boards accurately. I have tried other transfer methods that use a transparent film (such as TEC-200), but have wished for a more reliable technique.

These methods all use essentially the same concept, explained in previous Toner Resists articles in The Flash. Begin with an etch resist pattern, either taken from a magazine or built as a graphics file on a PC. You copy this image onto the transfer film using a photocopier for magazine artwork or a laser printer for PC files.

Next, place the film, toner side down, against a blank piece of copperclad board. Use heat and pressure to remelt the toner and move it from the film directly onto the copperclad. This transfer is typically done with a clothes iron or a heat press on a high heat setting.

Finally, peel the film from the copperclad, leaving behind the toner as an etch resist. It is this last step where previous transfer systems have had difficulties.

The toner sticks very well to the copperclad board, but some toner usually remains stuck to the transfer film. This leaves blank spots (voids) in the etch resist pattern when you peel the transfer film free. I have never been able to get reliable toner transfers, though others claim excellent results with the TEC-200 film.

DynaArt Designs' Toner Transfer System [not to be confused with BlackLightning's Transfer Toner - Ed] uses the same basic concept, but the transfer medium is a plastic-coated paper instead of a film. After remelting the toner onto the copperclad, you place the board and the paper (fused together by the melted toner) into a bowl of water. After about a minute, the paper backing floats free of the copperclad, leaving all of the toner fused to the copperclad.

My First Attempt

I started my first test by cleaning the blank copperclad, using first soap and water, then isopropyl alcohol. Every toner transfer method



I have used has stressed the importance of beginning with a completely clean board; DynaArt's system is no exception.

I then plugged in my wife's clothes iron and set it for COTTON fabrics (about 300 degrees). The DynaArt instructions clearly state that the iron must not have any water in it. Applying moisture to the back of the paper while ironing would ruin the transfer.

I spread a dry terrycloth wash cloth down on my workbench as an ironing surface. I laid the blank copperclad board, copper-side up, in the center of the cloth. I then placed the transfer, toner side down, on the copperclad board.

Next, I covered the board and transfer paper with a protective sheet of heavy paper (supplied with the DynaArt kit). This paper provides a smooth surface for the iron and prevents the transfer paper from charring or burning under the high heat.

I then started a timer for four minutes and began carefully ironing the transfer paper. Per the DynaArt instructions, I used only the iron's weight for pressure and moved the iron smoothly and slowly over the transfer paper. The instructions explain that too much pressure causes thin traces to spread as the toner melts.

After the four minutes elapsed, I set the iron aside and used a spatula to carefully put the copperclad and transfer paper into a bowl of water. Although the DynaArt instructions suggest you use a rag to move the heated copperclad board and paper, I found a kitchen spatula easier to use. I made sure to not disturb the transfer paper, as the board was still very hot and the toner might have smeared.

After a minute of soaking, the paper backing floated free of the copperclad, leaving a perfect toner transfer. The sample artwork contained a 40-pin IC layout, complete with traces of various widths from .010 to .025 inches. All traces transferred beautifully; even traces run between pads showed good separation.

I etched the board in heated ferric chloride, and removed the toner with acetone (nail polish remover) and a nylon scrubbing pad [the less toxic TransClean will work well for this - Ed]. Finally, I could take a close look at the results.

The copper pattern contained no breaks or voids in any traces. A block of text in various sizes showed some breakup in the 4-, 5-, and 6-point lettering, but the 7-point and larger type was clear and well-formed.

One section of the sample only 0.20 inches wide contained a pattern of nine parallel .010-inch traces. These traces were perfectly formed, without gaps or merging in any traces.

#### A Real Test

So much for using the sample artwork supplied by DynaArt; now to try the transfer process with some of my own artwork.

I laid out a 555 circuit for an LED flasher, using MacDraw II. The finished artwork had some 9-point lettering on it, and used .015 inch traces throughout. I had one instance of a trace running between two

IC pads.

The final artwork was only about 2" by 1.5", so I placed six copies on a single page. This seemed reasonable, as I couldn't very well run a tiny piece of transfer paper through the printer. This also had the benefit of providing extra images in case my first try did not work. Since I do not own a laser printer, I copied my artwork to a floppy disc and headed down to the nearest Kinko's copy center. Most Kinko's have PCs and Macs for on-site use; these machines can print directly to a Kinko's laser printer. Usage fees are reasonable; I paid \$8 per hour for the Mac (prorated to the minute) and \$0.95 per page of laser printer output.

After running a sample page to make sure my artwork was correct, I put a sheet of the DynaArt transfer paper into the laser printer feed tray.

NOTE: Make sure you clear this step with the Kinko's manager. They are rightfully concerned about the quality of paper people try to feed into their machines. You shouldn't have any problems with the DynaArt paper, though.

A couple of mouse-clicks later, my PCB artwork came out, sharp and crisp, on the DynaArt paper. I paid my bill (a total of \$3.08) and headed home.

I then used the clothes iron to transfer the artwork as described above, but I reduced the heating time to three minutes. I had noticed that the Kinko's copy was much darker than the DynaArt sample, so I thought it might contain more toner. I was worried that the extra toner might run when heated.

I was right. After soaking the transfer paper from the copperclad, I noticed that several traces had joined because the toner ran. I cleaned the toner from the copperclad, using acetone and a nylon pad as before. I then cut out another copy of my artwork and redid the heat transfer, this time for only 1.5 minutes.

This transfer yielded a sharp, clean transfer. After etching and cleaning, I looked over the results. The only gap in the traces was a very tiny one next to an IC pad, where the DynaArt process had faithfully copied my layout error. The lettering, angles, even the tiny holes in the center of each pad were all clear and well-formed. Not bad for an hour's work.

#### Doing Magazine Art

I had less luck when trying to copy an etch resist pattern from the ARRL handbook due to the fact that I was working with regular copier toner rather than extra dark laser printer output. I started by taking the handbook down to the Kinko's center. I had them make a transparency copy of my selected schematic (a DTMF decoder with many narrow traces). I then flipped the transparency over and copied the pattern onto a sheet of the DynaArt paper.

Creating a transparency and flipping it over corrects for the fact that most magazine artwork gives you a solder-side view of the board; since the DynaArt technique has a built-in image reversal, you have

to add your own reversal to make everything come out right. However, these extra steps add one more stage of copying and a lot of handling, increasing the chances for image distortion and density variations. Be sure to use a very clean, high-quality machine for these steps of the operation.

I then trimmed the transfer image, cleaned some blank copperclad, and heated up the iron. Since this image was larger than the LED flasher circuit, I decided to use the full four minutes of ironing, as recommended in the DynaArt literature.

This time, however, large areas of toner remained stuck to the transfer paper. The resulting etch resist pattern was unusable. Talking with Frank Miller of DynaArt confirmed what I had suspected; the DynaArt process is dependent on the type of toner used. Frank's sample artwork and my LED flasher layout were both done on laser printers. In Frank's case, the OEM toner cartridge had been replaced with a recharged cartridge containing a "super-black" type of toner, such as BlackLightning's Graphics Toner. I suspect the same is true of the cartridge in the laser printer at Kinko's. According to Frank, this super-black toner bonds to the copperclad better than does the stock toner from HP and Apple, and is virtually required to get a good pattern transfer.

The transfers I made using copied artwork, however, did not bond properly at all. If you cannot find a copy machine that uses the super-black toner, you probably won't get good results from magazine artwork. The DynaArt instructions warn that the newest digital color copiers won't make good quality PCB transfers, but they will work well for decals. The problem with using these copiers for PCB artwork lies in their laser-scan imaging technology; the fine scan lines create a poor etch resist transfer.

#### Doing Decals

The water-sensitive adhesive of the DynaArt paper allows you to create your own custom decals. Unlike the etch resist transfer technique, you can make decals without using heat, and the process is far less dependent on toner type. You can even get color with color print toners.

After printing my artwork onto the DynaArt paper, I followed the instructions and started by spraying three coats of clear acrylic paint on the image side of the artwork, making sure to let the paper dry between coats.

I soaked the paper with its decal pattern in water for about a minute. Gradually, the pattern and the protective acrylic coating began to slip free of the paper. I needed a non-porous surface to transfer the decal onto, so I prepared the fiberglass side of a piece of copperclad by wetting it with water. Working carefully, I slid the decal from the wet DynaArt paper onto the fiberglass board, then used the leftover wet paper to "squeegee" the excess water from the decal surface. This last action also helped smooth out the bubbles under the decal.

After the board dried, I had a nice decal of my resist artwork bonded to the fiberglass. Had I chosen, I could have added a coat or two of acrylic paint to help seal and protect the decal.

I admit to taking several shortcuts in my decal technique; the result would hardly qualify as professional. By carefully following the instructions included with the kit, DynaArt claims that you can end up with "a very clean image resembling that of a store-bought dry transfer decal..."

The DynaArt brochure suggests that you can take the decal process one step further. By carefully wiping the finished decal with denatured alcohol, you can remove the acrylic coating, leaving only the original artwork. This would result in a decal without the clear outline you see around typical decals.

Note that this last step will only work with "line-art" decals, similar to etch resist patterns or text. It will not work with photographic decals, as the image is too fragile to hold together once the acrylic coating is removed.

#### Wrapping Up

While my sample of photocopiers is pretty small, the fact that the DynaArt paper would not work with the Kinko's copier was disappointing. Perhaps I can find a photocopier that uses the super black toner, or maybe more practice will yield better results. If this inability to transfer from a well-maintained copier can be corrected, DynaArt Designs will have a real winner on their hands.

Still, I like the DynaArt system. I accept that for best results I will need to use a laser printer loaded with super-black toner. Those are pretty easy to find. I will be doing most of my PCB artwork myself, so I probably won't have much need to photocopy resist patterns.

The system has many other good points. I like being able to generate custom decals and panel artwork without using heat, a feature most other transfer systems do not provide. And when used with an super black toner cartridge, the DynaArt process can easily handle .010-inch traces. This gives you considerable latitude in home PCB design.

You can order DynaArt Designs' Toner Transfer System kit by writing or calling DynaArt Designs 3535 Stillmeadow Lane Lancaster, CA 93536, (805) 943-4746

The packages I received included instructions, five sheets of transfer paper and a sheet of protective paper for ironing; the price was marked as \$9.95.

Karl Lunt 2133 186th Pl., SE Bothell, WA 98012 (206) 483-0447.

Submission to The Flash (BlackLightning) 12 August 1992. Exclusive reprint rights, per signed agreement dated 7/29/92. (Originally published in Midnight Engineering, Vol. 3, Num. 3)

#ENDCARD

#CARD

Chapter 6...

Innovator Spotlight

## A Banner Year

By John Jeffries

Each Innovator Spotlight we write about people with creative ideas and projects, giving you a chance to meet other people using the technology to see what they're doing and how they're doing it.

The St. Francis de Sales Church, located in Bennington, Vermont, is an immense, graceful stone building of almost cathedral proportions. As part of their centennial celebration the Liturgy Committee wanted a pair of large 12'x12' banners with 8'x6' images, one of St. Francis, and the other of the church itself. The banner of the church was to be based on the original architectural drawing, a 14"x20" pen and ink. They began their search for banner makers by checking local and regional printing and silk screen shops. Everyone they asked said it was not a feasible project. The detail was too fine, the size too large, and the quantity too small. But, this is the perfect type of project for laser printer Transfer Toner, which excels in fine details and small, even single quantity, runs. There was still the issue of size. We had never tried a banner of this scale...

When we were initially approached by Gary Boulet, the Chairman of the Liturgy Committee, about doing a banner for their centennial celebration, we were a little taken aback by the size of the project. An 8'x6' banner is many, many times larger than the standard t-shirt or mug project and presented quite the challenge. After reviewing the original drawings and experimenting a bit we decided it was possible, even if unique. In order to do such a large banner, we created a mosaic of 8"x10.5" pages. The first step was getting the large pen and ink drawing of the church into the computer. Since it was larger than our scanner, we did it as several separate scans and merged the images in the computer using Adobe Photoshop. This produced an eleven megabyte image at 45 dpi with 8 bits of greyscale. Next we edited out an adjoining building which had been in the original architectural drawing but never built. We then adjusted the image following the guidelines published in the Flash Compendium and the spring issue of The Flash newsletter to adjust the contrast and intensity of the image to match the Transfer Toner dyes.

Once the image editing was completed we created four separate files, each with one quarter of the image, to create a 20"x16" proof on fabric to show the Liturgy Committee and get approval for the next step in the project. To achieve the antique tones of the original pen and ink, we prepressed the image for 60 seconds before doing the final proof on 100% polyester double-knit bright white fabric. This antiquing effect is created by the differential flow rates of the dyes used to make the black transfer toner. The St. Francis drawing was done in a similar manner, but without the pre-pressing to achieve the drawing's deep rich blacks.

Once we had received the signed and approved proofs, we printed the 81 pages that made up each image and set to creating the final

banners. To create the 81 pages, we used Adobe Photoshop and the selection tool to chop the image up on a 9 by 9 grid; tedious, but it worked. We had tried exporting the image to Adobe Illustrator as a placed EPSF image but were unable to get it to print properly. It would be nice if Photoshop could tile an image to more than one page; a very simple task for the computer. Once we had the printed pages, the biggest problem was getting the alignment of successive rows of the mosaic because, as each page is heat pressed, the fabric changes size, stretching and shrinking. To overcome this, we pre-stretched the fabric using a jig we cobbled to the heat press. Thus, during the pressing, each image would end up properly aligned with the previous one and with the rows below and above it. While the results were not absolutely perfect, they were close enough so that it looks fine when the large banner, twice the height of a tall man, is viewed from the typical viewing distance of 20' or more.

Doing this large a banner was quite the adventure. Next time we'll try to find a more dimensionally stable fabric, possibly sail cloth, to minimize the alignment problems, make the project go faster and produce even better results. Still, the Liturgy Committee and the parish members were very pleased with the end results, hanging on either side of the nave in the St. Francis de Sales Church in Bennington, Vermont through the end of November.

If you're interested in seeing the banners or the church or purchasing the forthcoming book of the history of the church (\$20), contact Gary Boulet at St. Francis de Sales Parish, 238 West Main Street, Bennington, Vermont 05201.

#ENDCARD

#CARD

Chapter 6...

## Innovator Spotlight

### Creation of a Tribute

by Catherine Croft of BlackLightning

In 1987, Cleve Jones lost a very dear friend to AIDS. In his anger and frustration, he took a piece of cloth and violently painted it in all different colors, trying to release the pain and helplessness that welled up inside of him. The cloth was then draped over his friend's casket. Jones' tribute to his friend's life, which made the loss easier for him to deal with, was the beginning of what would soon become the AIDS Quilt.

A year earlier, Jean Enos lost her 34-year-old son, Michael, to AIDS. At the time of his death, there was no tribute to the many thousands of people whose lives were cut short by this terribly misunderstood disease. When Jean heard about the AIDS Quilt, she knew she'd have a chance to share her son's life. Although it has taken 4 long years, Jean is now putting the finishing touches on Michael's 6'x3' panel. "As soon as I heard about the AIDS Quilt, I wanted to do a panel, but

it took me 4 years to be able to do it. Losing a child is very difficult. It was very traumatic. A while ago, I saw a piece in our local paper that there would be a workshop for people who wanted to make panels. I discussed the panel with my daughter, and we decided to construct it of things that were really Michael, I have a beautiful 11"x14" color photograph of Michael that I wanted to have transferred to the material itself, somehow."

After checking with at least 15 companies between New Hampshire and Vermont, one of them recommended BlackLightning. "No one seemed to know that much about the process, or how I could have it done, but finally someone suggested that they thought BlackLightning could do it," said Jean.

Since this was the first color photograph that Walter had worked with, he needed to do a lot of experimenting to get the color tones exactly right. Jean recalls, "Walter did a lot of transfers in order to get the color just right. He pretty much got it down to a science. He even transferred the photograph to metal. I am very pleased with it."

Because the background of the panel is blue -- Michael's favorite color -- the final print was transferred onto white material and then sewn, by hand, onto the panel. "After the print was sewn on, I put a sort of "frame" around it with other fabric. People who have seen it love it! They thought it was silkscreened, and wanted to have it done also. A lot of people asked how it worked, but I couldn't tell them -- I was just so grateful that Walter took the time to try to get the picture right. I am so happy with the results. It's the center of the panel and so beautiful."

Working on the panel has been very healing, but also very painful for Jean. "At times it's almost impossible to believe that I'm sewing this panel because Michael's not here anymore. It's a strange thing. You almost don't want to part with the panel. You feel so close to the person you're sewing it for. It has been very difficult. Especially with the picture. You just look at it... That picture was the most important thing for me to put on the panel. Other things I could have given up, but that I really wanted."

The AIDS Quilt is stored in San Francisco, and is very, very well protected. Agents travel with the quilt to oversee its care. It is folded up every evening at 8 p.m. and stored, and then opened up between 8:00 and 8:30 in the morning. "The Quilt is so huge now that it is almost impossible to show in its completed state. There are over 16,000 panels for New England alone. Almost 1,000 panels displayed were from New Hampshire and Vermont, including the seven new panels that we've been working on."

Jean explains, "The Quilt is a powerful thing to see. It makes you think, 'Gee, this is someone who died of AIDS and this is someone who loved them. This is a tribute to their life.' We hope that it will have a very healing affect. We hope that it will bring people closer and heal all the misconceptions there are about AIDS. But the

sadness just never, never goes away. It's a terrible disease to watch someone you love go through. In the prime of their lives, all of these people are dying of AIDS. In the prime of their lives -- and it's very sad. "

How It Was Done...

by Walter Vose Jeffries

Jean Enos' project was very challenging for one simple reason. Color. This was the first full color photograph that we had tried. We knew of customers who were doing four-color separations to make full color transfers of photographs, but this was our first try. Once we had a computer scan, the next step was to separate the image into the component colors (Cyan, Yellow, Magenta, and Black). This was accomplished with Aldus' separation software for the Macintosh. The resulting Postscript file sends four different images to the laser printer, each consisting just of its own component colors. This same general procedure is used in making color separations for magazines, newspapers, posters, and other print jobs handled by big print houses.

We then ran the four print jobs out onto one piece of paper (multi-pass printing) to get the first transfer. It worked, but the color was badly off. The reds were too strong and the image was a tad too dark. With a program like Adobe Photoshop I could have adjusted the colors in software quite quickly to achieve the final product. Lacking that, I adjusted the color first by changing the printer density for the different passes, and then by printing the Magenta (reddish) pass, transferring it lightly for 10 seconds, printing the other passes on that same piece of paper, and again transferring it lightly for another 10 seconds, and then doing the final transfer to Jean's panel for 40 seconds at 425°F. The first transferring removed a little of the red color helping to balance the saturation. The second transferring smoothed out the image by dispersing the dye a little. This softened the dots that the laser printer uses to print an image, making it look more photographic. In all I did over 100 transfers of this image, working out the color, density, saturation, and grain. This was our first try at a color photograph reproduction and the final result was worth it. The project would have gone much faster if we had our own color scanner and the proper software but it did show that it could be done. With bit of ingenuity, and a little persistence, we gained in knowledge and at the same time, produced a piece that was well worth the effort.

Got an interesting, innovative project? Let us know and we may spotlight it in The Flash! Write: The Flash, Riddle Pond Road, West Topsham, VT 05086.

#ENDCARD

#TAG C6S9P2.pct

#CARD



## Chapter 6...

### Innovator Spotlight

#### A Vermont Country Store

by Holly Blumenthal of BlackLightning

Each issue we write about people with innovative projects, giving you a chance to meet other people using the technology and see what they're doing and what they are like.

When you think of Vermont, what images come to mind? The snowy white hills, maple sugaring, cows, and of course, the Vermont country store. For many people, the idea of owning a General Store in New Hampshire or Vermont is an idyllic dream. Sometimes even a vision that keeps them going.

Growing up and working in Lowell, Massachusetts, Bud and Donna Nelson often dreamed of moving out of the city and up to the country where they would run a general store, a center of the community, a place where people gathered.

In 1989 the dream came true. They sold their store near Boston and moved north, to West Topsham, Vermont, to take over Hight's General Store. Among other things that came with the store, was a postcard photo of the building, taken in the 1920s. That was after the fire of 1901, in which the store was badly burned and rebuilt, but before the Hurricane of 1938 when the building lost its peaked roof. The building has changed over the years, but Bud and Donna are working hard to retain that original, general store, flavor. Now named, The West Topsham General Store, it is a general, general store with everything from milk and butter to deli offerings, soaps, hardware and hunting licenses.

[Picture 1]

Beautiful old tins, signs and antique figurines are scattered throughout the store. Bud and Donna both love antiques. They appreciate the quality of the old pieces. Things that were made with care to be reused and last. This is a clear reflection of their values. The entire family works hard to run the store. The hours are long and the margins small, but there is a pride in the work that they do, in doing things right, and doing it themselves. "You've gotta like it", explains Bud.

Shawn, the middle boy, elaborates, "It's kinda neat [working at the store]. You get to hang out, meet new people, and learn skills for when you get out on your own." Still, he sometimes misses the city, where everything was near by and you could walk to the movies. But, he concludes, "It grows on you."

Donna likes having all the kids work in the store. Especially during this recession it was important that they were all pulling together as a family. And, as she adds with a grin, "It teaches them what it takes to run a business. Why, Scott or Shawn could run the store on their own if they had to. They know how to do what needs to be done."

Even little Kerrie'll help out."

Along with their renovations to the store, Bud and Donna wanted to somehow render and revive the old postcard of the store, put this piece of history in the spotlight, and hopefully create a popular item for the store. They asked if we could put the 1920s picture onto T-shirts using the transfer toner.

There were a couple of hurdles between postcard and T-shirt. First the Nelsons wanted a tree and other background items removed so the resulting image would focus on the store. This cropping was accomplished in Adobe PhotoShop using the pen tool. The next question was how the image would look after being blown up from about 2"x3" to 8"x10.5" to fit on the T-shirt. Fortunately our MicroTek SZ 600dpi scanner was up to the task. We scanned it at the full 600dpi in 8 bit grey scale, cropped out the unwanted elements, added a title in hand writing along the bottom, and resized it to the full page at 30 lines per inch for printing on a 300dpi LaserWriter Plus. (See Transfer Secrets in this issue for more details on this process.) We then used Adobe Illustrator to print a second page with the store name and address curved across the top in Magenta. The shirts are ash grey with the old picture of the store in black and magenta lettering. "A splash of old and new that came together beautifully."

Bud's interest in tins and old signs led him to also design a rendition mug that was done with BlackLightning transfer toner. The full color old fashioned design was scanned, printed and transferred onto premium mugs. The resulting rich colors on the pure white mugs look very sharp. Like the renovations they have done on the store, it's as though you had stepped back in time to see the old when it was brand new.

Got an interesting, innovative project? Let us know and we may spotlight it in The Flash! Write: The Flash, Riddle Pond Road, West Topsham, VT 05086.

#ENDCARD

#TAG C6S9P1.pct

#CARD

Chapter 6...

Innovator Spotlight

Block Prints at the Woodstock Historical Society

by Catherine Croft of BlackLightning

Each issue we write about people with innovative projects, giving you a chance to meet other people using the technology and see what they're doing and what they are like.

The first installment in an ongoing series of profiles of BlackLightning customers. Each issue we'll interview customers with innovative projects.

Passersby and tourists are enchanted with the wonders of a lost age when traveling the streets of historic Woodstock, Vermont. Buildings have been restored down to the awnings and house numbers, and neon is nonexistent. The Dana House on Elm Street, a stately federal, is home to the Woodstock Historical Society -- a museum holding artifacts and furniture dating from 1740 to 1900. An attached barn displays tools and machinery mostly made in Central Windsor County, and contains a charming museum shop. The property extends to the Ottauquechee River, and there is a wonderful herb garden out back where people sit and have their lunch in the warmer months.

The Woodstock Historical Society has incorporated the technology of BlackLightning's Transfer Toner in creating reproductions of a children's handkerchief, circa 1840-1850, to sell in the museum's gift shop.

The handkerchief, block-printed on a very light cotton cloth with a delightful sketch of children and the multiplication tables, was displayed in the Mack Toy Room of the house. Dusty Hardy reflects, "Many visitors to the museum would stop to admire the prints, and I would overhear people come by and say 'Oh, isn't that darling...'. Somehow the idea came about that it would be interesting if one of the prints could be reproduced and retailed to raise proceeds for the Historical Society."

Now came the task of finding a way to do high quality, affordable reproductions. Gregory Schwarz, Executive Director of the Historical Society, did intensive research on the origin of the prints. "At least two of the handkerchiefs were printed by the now defunct Boston Chemical Printing Company, a mid-19th century concern," states Schwarz. "There was no way that silk screening could capture the detail of the original 11"x12" print. I then remembered some literature I'd read on a process developed by BlackLightning. I have toner cartridges remanufactured with them, and received The Flash. There was a lot of information on their transfer toner, and I realized they could create what we needed."

After approaching Walter Jeffries, president of BlackLightning, the Woodstock Historical Society was convinced that the transfer toner process was indeed the answer. Not only are the details of the original print outstanding, but the initial cost is much less than silk screening the reproductions. "Because of Walter's great process, we don't have to buy 1,000 at a time, making the cost so much easier to deal with. You don't have to over-inventory, and as a result, funds are not tied up, and the prints are readily available," states Schwarz. Due to the incredible response from people who have simply seen the reproduction in process, the Historical Society plans to have reproductions made of the other handkerchiefs -- all of which depict elementary school exercises. Schwarz smiles, "In this day and age, when there are so many calculators and computers, it's good to give children a little reminder that the multiplication tables exists."

The museum welcomes visitors from May to October, however, the office is always open. Anyone wishing more information should contact Greg Schwarz at (802) 457-1822. Concludes Schwarz, "I've had great fun with this process and working with BlackLightning. We are all so excited. This will surely be a successful venture."

[Picture 1]

How it was Done...

by Walter Vose Jeffries

The request from the Woodstock Historical Society for replicas of mid-1800 century blocked handkerchief was a good test of BlackLightning's Transfer Services. A big job, custom color, and an ideal match because our transfer toner actually dyes the fabric rather than sitting on the surface like silkscreening, thus simulating the old block-printed look.

The first problem was matching the color of the aged ink. We solved this by antiquing our Black Transfer Toner with a precise mixture of red and yellow dyes. This produced a slight brownish tinge that matched the original image making the replicas look older. To further enhance this effect we used a linen fabric with a touch of yellow in it.

We photocopied the handkerchief to get a high-contrast image which we scanned into a Macintosh IIci at 300 dots per inch (dpi) on a Microtech scanner. Due to the large size of the original, we scanned it in two parts, saved them as TIFF files, and joined them in DeskPaint. This image was then touched up and enhanced and faded and torn spots on the original were retouched.

The final computer image was printed at 300 dpi on a LaserWriter Plus with the Antique Black toner to produce the transfers. Small handkerchiefs were printed one to a page and larger ones were split across two pages and then joined.

The cloth, a 50/50 cotton/polyester blend was cut into six foot strips, small enough to handle easily yet large enough to make for efficient production. The image was heat pressed on in batches at 400°F for 25 seconds with a medium pressure. We use a George Knight T-Shirt EconoPress. A dry mounting press would also work for this purpose. The cloth was finally cut apart, and hemmed to produce the final handkerchiefs ready for sale.

Got an interesting, innovative project? Let us know and we may spotlight it in The Flash! Write: The Flash, Riddle Pond Road, West Topsham, VT 05086.

#ENDCARD

#TAG C3S3P2.pct

#CARD

Chapter 6...

Employee Spotlight

Marvin

By Holly Blumenthal

Each issue we give you a chance to meet some of the folks on the BlackLightning team. This time is a bit unique, Marvin, who we interviewed for this issue, is a computer...

If you have called us at BlackLightning any time over the summer you have met our newest employee, Marvin. As our computerized phone attendant, he has had quite a busy summer and fall. Being both a talker and a good listener, Marvin is well qualified for his job. He answers the phones 24 hours a day, providing basic information, taking messages and, during regular business hours, he can transfer calls to the appropriate person. Marvin's a very consistent sort; isn't that just like a computer! He is always pleasant, even on Monday morning and Friday afternoon. And, he's a quick study, you only have to tell him something once. He had our whole catalogue down pat in no time at all. What a memory! Marvin has been keeping track of when calls come in, and quite a few folks have been chatting with Marvin into the wee hours of the night and over the weekends. It is great to be able to keep BlackLightning's lines open with Marvin and still allow the rest of the folks at BlackLightning to get some shut-eye. Quite a few people have told us how much they enjoy Marvin, and we are glad to know that he is so helpful. We understand that some people do not like talking with a computer, and Marvin tries not to take this too personally, but Marvin is a key factor in our effort to do more without having to hire additional staff, something that would increase our overhead and force prices up. This keeps costs down and efficiency and spirits up which means our customers get better service and reasonable prices.

It was need that prompted the inspiration to create Marvin. Walter Jeffries, president and founder of BlackLightning, was working to increase efficiency and effectiveness of the office system. Many customer calls were being missed during peak hours and many people call in search of quick bits of information such as the address, how to send in cartridges and basic product information and pricing. With Marvin at the phone helm to take on these tasks, the office worker can work at other tasks and there is more of an opportunity to provide in-depth information to those customers who need it. Walter put together the hardware and wrote the software to created Marvin. We installed the first version late in May as a back-up on phones when the representatives were all busy on other lines. Marvin soon graduated to first-on-phones and now handles 35% of the calls all by himself, providing product descriptions, our address and fax number, pricing, and other information. Marvin's a busy guy, handling as many as 200 calls a day. Marvin is still growing and learning, as all youngsters do. He will soon be taught how to take orders as well as give customers information about their order and account status. Marvin even aspires to eventually absorb the technical manuals developed at BlackLightning and provide basic tech support during off hours! Who better then a computer for a

methodical, knowledgeable, and consistent technical analysis of computer equipment!

Marvin has recently learned how to better assist when a customer is waiting on hold. Marvin monitors what the other people at BlackLightning are doing, when a call comes in and the lines are busy, he tries to help, and then when a human becomes available, transfers the call to them as needed. If the representative's phone is busy for more than two minutes, he will come back on the line and allow the caller to choose between remaining on hold, going to the menu for information or leaving a message. Each new lesson that Marvin absorbs is a greater boon for BlackLightning customers. While Marvin works twenty-four hours a day, he also enjoys his walks in Vermont. When he puts a caller on hold, he takes them down to our brooks and marshes to hear the peepers and the tree frogs chirp. Beaver, deer and moose also abound in this valley. Recently he's been enjoying the magnificent colors of the fall foliage here in Vermont. Other activities that Marvin enjoys include bit twiddling and meeting new people.

Marvin's biggest difficulty on the job so far was when he was temporarily cut off from the world by a moose who walked through the phone lines. It was quickly repaired and Marvin is once again ready and waiting for your call.

Interested in using the Marvin Phone System? Write: The Marvin Project, Mountain Micro, Riddle Pond Road, West Topsham, VT 05086  
#ENDCARD

#TAG

#CARD

Chapter 6...

Government

Tax Abuse -- Will It Never End?!?!

Despite the 1967 ruling by the Supreme Court, National Bellas Hess, that specifically protected consumers from paying sales tax on out-of-state purchases, more than 35 states have passed anti-Bellas Hess legislation and many have begun enforcement actions. These states were flagrantly ignoring the law, the constitution and several Supreme Court decisions (in 1967 and again in '77, '88, and now in '92) with their actions. One case, Quill Corporation v. North Dakota Department of Revenue, made it to the Supreme Court again last winter. With several states, marketing associations and consumer groups supporting Quill's position, the Supreme Court has again upheld the out-of-state marketers' protection from tax liability. In an 8-1 ruling the Court affirmed that without Congressional authorization, state governments cannot force out-of-state mail-order companies to collect state-imposed use taxes on purchases made by in-state customers. This means consumers are protected

form paying sales tax on out of state purchases. When will these states get the message and stop wasting the Supreme Court's time and both their victims' and the taxpayers' money with unconstitutional actions?

What are the potential results of individual states imposing taxes on nonresident companies? The consumer will ultimately lose out. At the very least the companies will have to charge significantly higher prices to compensate for the cost of collecting and filing taxes under more than 6,000 state and local taxing jurisdictions with many different rates and exemptions. Many small companies would be forced to stop selling to customers living in the states that have anti-Bellas Hess laws or would simply have to shut down completely. Most mail-order companies are small operations with an average of only 17 employees. In fact, the Bureau of Census reported in 1987 that approximately one-third of all mail-order companies are sole proprietorships or partnerships. Requiring these small companies to collect taxes for every state and locality would place an insupportable burden on them and many would fold. This in turn would limit the choices for consumers.

So now that the Supreme Court has decided again; we are safe, right? Not exactly, the Court ruled that it is currently illegal for the states to attempt to collect taxes from out-of-state businesses, but it also said that it is within Congress' power to reverse this decision. So, it is even more important now than ever before for consumers to contact state and federal representatives and voice disapproval for such taxation without representation. This is what started the revolution in 1776!

#### Modem Tax

A commissioner with the U.S. Federal Communications Commission (FCC) recently stated that the FCC may again examine the possibility of imposing "modem fees" for information service companies such as CompuServe, America Online, and private bulletin boards. The FCC has thus far demonstrated an unwillingness to reconsider an earlier ruling that could have the same effect as a "modem fee" to information service companies who wish to use new network technologies or service arrangements. Observers have said the fees could drive up telephone line costs to information services companies by as much as 300 percent, all of which users would pay in higher costs. Furthermore, several states are now charging taxes for the transfer of information via modem.

This is counter productive to our national competitiveness with other countries, our growing awareness of environmental issues and striving for efficient ways of working without polluting. Electronic commuting is a viable alternative to driving a car to work. It saves gas, money, and time. E-mail and international network communications should be encouraged, not repressed. Taxes on modems and information will stifle development of advanced technology, further hurting our international trade balance, our

deficit, and the environment. We should instead be putting taxes on gasoline and other pollutants.

The government does not know best. Legislators and bureaucrats will tax us to death unless we fight back. It is important at this stage for consumers to send a letter to the FCC in opposition to modem fees and also to write US Senators in the Senate Communications Subcommittee to encourage legislation that would require the FCC to allow information services companies to use new and more efficient technologies without being subjected to higher telephone line access charges. In the House, address your concerns to Congressman Edward Markey of Massachusetts, Chairman of the House Telecommunications Subcommittee. In 1987, a similar letter writing campaign by computer users helped prevent increased access charges from being implemented.

Fight back -- Stop further tax abuse!

Call or write to U.S. Senators on the  
Senate Communications Subcommittee

Letters to Senate members may be addressed to:

The Honorable \_\_\_\_\_  
United States Senate  
Washington, D.C. 20510

Senator Lloyd Bentsen  
Phone: 202-224-5922

Senator John Breaux  
Phone: 202-224-4623

Senator Conrad Burns  
Phone: 202-224-2644

Senator James Exon  
Phone: 202-224-4224

Senator Wendell Ford  
Phone: 202-224-4343

Senator Albert Gore  
Phone: 202-224-4944

Senator Slade Gorton  
Phone: 202-224-3441

Senator Ernest Hollings  
Phone: 202-224-6121

Senator Daniel Inouye  
Phone: 202-224-3934



Senator John Kerry  
Phone: 202-224-2742

Senator John McCain  
Phone: 202-224-3004

Senator Bob Packwood  
Phone: 202-224-5244

Senator Ted Stevens  
Phone: 202-224-3004

Write to the Chairman of the House  
Telecommunications Subcommittee  
Representative Markey  
Chairman, Subcommittee on Telecommunications and Finance  
U.S. House of Representatives  
2133 Rayburn House Office Building  
Washington, D.C. 20515  
Phone: 202-225-2836

Write to the Chairman of the FCC  
Chairman Alfred C. Sikes  
Federal Communications Commission  
1919 M Street, N.W., Room 814  
Washington, D.C. 20554  
Phone: 202-632-6600

Also write your local and state representatives and put them to work on this issue.

Note that it is very important for you to personalize your letter. Your message will be more effective if it is not perceived as simply a form letter, but instead gives your individual reason for opposing modem fees. The text below is to get you started.

Suggested Text of Letter about Modem Tax

Dear Senator \_\_\_\_\_,  
I have read that the FCC has thus far been unwilling to reconsider an earlier ruling that would result in increased telephone line access charges to on-line information services that wish to use new advanced telephone network features in delivering information services. I also read that an FCC Commissioner has stated that the FCC may look once again at whether the FCC should require information services to pay usage-sensitive carrier access charges or "modem fees" for the local telephone lines they use to distribute their services

to customers. If such higher fees for using local telephone lines were to be imposed and passed on to information service subscribers, this likely would have the effect of severely curtailing the use of information services just as the market for such services is beginning to develop.

Furthermore, the development of advanced communications is vital to our national competitiveness in the world. Telecommuting also saves resources as we can now work from home, saving gas, time, and pollution by not commuting by car.

I urge you to pass legislation which would prevent the imposition of any new usage-sensitive carrier access charges or "modem fees" on information services. The legislation also should allow CompuServe, America On-Line, Genie, InterNet, private bulletin board systems, and other information service providers to use new and more efficient technologies without having to become subject to higher access charges.

(Describe what on-line services you use and how you use them.)

(State that you will curtail your use of information services if the FCC's access charge rules cause price increases;)

(If you live in a rural area, state that affordable access is important because on-line information services help you keep in touch with the world.)

Thank you for your consideration.

Sincerely,

#ENDCARD

#CARD

Chapter 6...

### Machine Compatibility

Many laser printers use the same basic print engine so their supplies and parts can often be interchanged. This chart will help you decipher what toner cartridges will work with your printer. EP cartridges are used in the CX print engine, EP-S in the SX, EP-L in the LX. These three types can use BlackLightning color and transfer toners.

Manufacturer	Machine	Cartridge
AB Dick	2205	EP
	IP-0800-SMT	EP
Acer Technologies	LP0-75	R4080
	LP-75	R6000
Acorn Computer	L08219	EP
	LX528	EP
	LX3219	EP
	LX3815	R4080
	LX8219	EP
Adex Corp	508	EP

Advanced Tech Intl	800	EP
	870	EP
	880	R4080
	DW-1	R4080
	DW-2	R4080
	GR-2	R4080
	Laserprint 1500	R4080
	Laserprint 1570	R4080
	RP-1	R4080
Advanced Vision	AVR-LPC3	EP
Aedex Corp	LaserBar 508	EP
	LaserBar-608	R4080
	LaserBar-615	R4080
Alphatext	Alphatext 8	EP
American	Pagewriter	R4080
Apple	Inkjet	Bj10
	LaserWriter	EP
	LaserWriter II	EP-S
	LaserWitr IINT	EP-S
	LaserWitr IINTX	EP-S
	LaserWrtr IISC	EP-S
	LaserWrtr Plus	EP
	Psnal Laser NT	EP-L
	Psnal Laser SC	EP-L
Arkwrite	8A2	EP
AST Research	TurboLaser/PS	R4080
	Turbo Laser Plus	R4080
	Turbo Laser	R4080
	Turbo Laser/EL	R4080
AST Res (cont.)	Turbo Laser/PS	R4080
	Turbo Laser/XL	R4080
ATI	LaserPrint 800	EP
	LaserPrint 870	EP
	Laserprint 1500	R4080
AutoLogic	APS-55/200	EP
AVR	LPC-3	EP
BDS	630/8 LP3X	EP
	630/8 LP	EP
	630/8E	EP
Bedford Computer	QMS 800	EP
Blaser Industries	Blaser LP	EP
Brother	HL-8 Postscript	EP-S
Burroughs	AP9208	R4080
	AP9215	R4080
Canon	LBP 8II	EP-S
	LPB-8A1	EP
	LPB-8A2	EP
	LPB-20	EP

	LPB-200S	EP
	LPB-4	EP-L
	LPB-CXCAD	EP
	PC 3/5/51	A15/A30
	PC 6/6re/7	A15/A30
	PC 11	A15/A30
	PC 10/14/20	PC 10/25
	PC 24/25	PC 10/25
	PC 70 µfiche	MP N/P
	PC 80 µfiche	MP N/P
Cenegraphics	8707	R4080
Centronics	Page Printer #8	EP
CLR	FormWriter 2	EP
CMT	800	R4080
Compugraphic	CG 300-PS	EP
	EP 308	EP
Computer Language	FormWriter 2	EP
	FormWriter 2A	EP
	FormWriter 2X	EP
	FormWriter 4	Ricoh
	FormWriter 10	EP
Computer Lan (cont.)	FormWriter 10D	EP
	Res FormWrtr4	R4080
	Res FormWrtr8	R4080
Concept Technologies	ConceptWriter	EP
	Laser 8	EP
Cordata Inc	Intellipress Prtr	EP
	LP 300	EP
	LP 300X	EP
Corona Data Systems	Corona LP-300	EP
	Corona LP-300X	EP
Corporate Data Sci.	CDS 2300	EP
.	CDS 4300	EP
CPT	LP-6	EP
	LP-8GS	EP
	LP-8S	EP
	LP-300	EP
	Pageprinter 1	R4080
	PS-8	EP
Data Card	Troy 308	R4080
Data General	4557	EP
	4558	EP
Datacopy	LP	EP
Datageneral Corp.	DG Model 4557	EP
	DG Model 4558	EP
Datapoint	7410 StarBeam	EP
DEC	LN 03 Plus	R4080
	LN 03	R4080

	Scriptprinter	R4080
Decision Data	6408	R4080
	6408-2	R4080
	6415 15PPM	R4080
	6415	R4080
Destiny Tech Corp	Laseract II	R6000
Detewe	8A1	EP
DTC/Kidron	Octave LP	EP
E.L.T.	Labelmaster 10	R4080
	Labelmaster 20	R4080
EFS	FormWriter 2	EP
	FormWriter 2X	EP
Epson	GQ-3500	R6000
	GS-3500	R6000?
Ericsson	7160	R6000
Facit	Opus 3 15PPM	R4080
	Opus P60...	R6000
	Opus1	R4080
	P7080 (Opus 2E)	R6000
Facit (cont.)	Opus 4	R6000
	P7080A	R4080
	P7150 (Opus 3)	R4080
Formwriter	II LaserPrinter	EP
GBT	6630	EP
	6630DW	EP
	6630LS	EP
	6633XP	EP
	6634XP	EP
	6635XP	EP
GDS Systems	Laser 5224	EP
Genecom	NewGen Laser	EP-S
General Computer	Business LP	R6000
	Personal LP	R6000
	Personal Lsr PTI	R4080
Genesis Computer	LaserSet Ptr	EP
Genigraphics	8707 8PPM	R4080
	8707	Ricoh
Getronics	Visa LSR-6000	R6000
Graphic Softwr Syss	Concept Writer	EP
GTC Technologies	Blaser	EP
	Blaser Five	EP
	Blaser II	EP
	BlaserStar	EP
Hanzon	LP-3000	R4080
	LP-5000	R4080
Harris	H165	R4080
Harris/Lanier	LS-6	R6000
	LS-8	R4080

Hayes µCmptr Prdcts	LaserPrinter	EP
Hewlett Packard	1686TA	EP
	2686TA	EP
	2687A	R4080
	2688A	R4080
	DeskJet	
	Inkjet	
	LaserJet	EP
	LaserJet 2686	EP
	LaserJet 500 Plus	EP
	LaserJet Plus	EP
	LaserJet PlusT	EP
	LaserJet II	EP-S
	LaserJet III	EP-S
	LaserJet IIP	EP-L
HISI	LP-601	R6000
Honeywell	Italia Laserpage	R4080
	Model 80	R4080
IBM	4216	R6000
	4216 Persnl PP	R6000
	Pagelaser 4216	R4080
	Persnl PP 2	R6000
Imagen	8/300	EP
	12/300	R4080
	2308	EP
	3308 XP	EP
	ImageStation	EP
	Innovator	EP
Imprint Technologies	Light Writer	EP
Informer Compt	Term1 287-LP	EP
InformTech	PC-LPI	R6000
	LP-6000	R6000
Interkom	I-4908	EP
Interleaf	LPI-308	EP
	LPR-308	EP
	OPS-2000	EP
Itek	Digitek	EP
	Digitek Lsr	EP
	PTW Laser	EP
Kel	Kel M5300	EP
Kodak	EktaPrint 1308	EP
Koolshade	KS-LP28	R4080
Kyocera	1010/2010	Kyocera
	1000/1200	Kyocera
Laser Barcode Syst	Barcode Printer	EP
Laser Connection	PS Jet Plus	EP
	QMS-PS 810	EP-S
LaserData Inc	LaserView	R4080

Laserlink Sys	Jet Plus	EP
	Jet Twinmax	EP
LaserMaster	4081	R4080
	LTD	R4080
	Laser Max1000	EP-S
	XT/RP	R4080
	XP/RP	R4080
LaserSoft	PT SYS II	R4080
Linotype	LaserPrinter 8/4	EP

+++++++ Continued on next card +++++++

#ENDCARD

#CARD

Chapter 6...

Machine Compatibilty, continued

Management	MGI Laser	EP
Memorex	2108B	R4080
	2115	R4080
Mitek Systems	LaserShare 2105	EP
	LaserShare 2115	EP
	Model 100T	EP
	Model 110T	EP
Mitek Sys (cont.)	Systems 115T	EP
	Systems 120T	EP
	Systems 125T	EP
	Systems 2125	EP
Mnemos	6000	R4080
	SmartWrtr 80+	EP
	Laser 8-Big Kiss	EP
	Laser 8-PS800	EP
	Laser 8-PS800+	EP
NBI Inc	908	R4080
	IWS LaserWriter	EP
	LaserPrinter	EP
NCR	1510	R4080
	6406	EP
	6416	EP
	6436	R4080
NEC	LaserSmith 415	EP
	SilntWrtr LC890	NEC 890
	210	EP-S
	290	EP-S
	Model II 90	Minolta
Newgen Turbo	PS/300	EP-S
NeXT	Laser Printer	EP-S
North Atlantic	LaserII	EP
Oasys	850 LaserPrinter	EP

	LaserPro 805-C	EP
	LaserPro 805R	R4080
	LaserPro 810-C	EP
Oasys	LaserPro 812	R4080
	LaserPro 820-C	EP
	LaserPro 820-R	R4080
	LaserPro 1510	R4080
	LaserPro	EP
	Laserpro 810R	R4080
Octave Systems	LaserOctave	EP
Office Automation	LaserPro 8C	EP
	LaserPro 805-C	EP
	LaserPro 810-C	EP
Okidata	Laserline 6	R6000
	LaserLine 6 Plus	R6000
Olvetti	PG101	EP
Olympia	LaserLine 6	R6000
	LaserStar 6	R6000
OMT	800	R6000
Packard Bell	PB-83PS	EP
	PB-8300	EP
Packard Bell (cont.)	PB-8300CP	EP
	PB-9000 Plus	R6000
PCPI	DaiseyLaser	EP
	Laserimage 1000	R6000
Personal Comp	Daisylaser 1000	EP
	DaisyLaser 2000	R4080
	Laserimage	R4080
	Laserimage 2000	R4080
	Laserimage 3000	R4080
Phillips Info System	LaserPrinter	EP-S
	PLP-15	R4080
Prime Computer Inc	8PPM	EP
QMS	410	EP-L
	Big Kiss	EP
	Big Kiss II	EP-S
	ConceptWriter	EP
	Kiss	EP
	LaserGrafix 800	EP
	LasrGrafix 800 II	EP
	LaserGrafix 1500	R4080
	LaserGrafix 1510	R4080
	PS-800	EP
	PS-800 II	EP
	PS-800+	EP
	PS-810	EP-S
	PS-820	EP-S
	SmartScript 800	EP



	SmartWrtr 8/3X	EP
	SmartWriter 80	EP
	SmartWriter 80+	EP
	Smartwriter 150	R4080
Quadram	Formsptr Plus	R4080
	Formsprinter	R4080
	Quadlaser DP8	R4080
Quadram	Quadlaser FP8	R4080
	Quadlaser Plus	R4080
	Quadlaser PS	R4080
	Quadlaser PS+	R4080
	Quadlaser PP8	R4080
	Quadlaser WS8	R4080
Radio Shack	LP1000	R6000
Renful	CLP2000	R4080
	ELP2000	R4080
Ricoh	LP1060	R4080
	LP4080	R4080
	LP4080R	R4080
Ricoh (cont.)	LP4120	R4080
	LP4150	R4080
	LP40814I	R4080
	PC Laser 6000	R6000
	LaserLine 6000	R6000
	LP-1060	R6000
Rise Tech	EPT-1	EP
	ETP-1	EP
Sony	IPL 1340	EP
	OAP 5108	R4080
Star Micronics	LaserPrinter 8	EP-S
Steinic	L-2060	R6000
	LaserPrinter	EP
	Sun LaserWriter	EP
Syntrex	Synjet	R4080
Tab	Series 100	EP
Talaris	610/620	EP
	802	EP
	810/812	EP-S
	System T-160	EP
	System T-800	EP
	System T-1500	R4080
Talaris Systems	810/812	EP-S
	T-1590	R4080
Tandy/Radio Shack	LP-1000	R6000
Telex	Laserprinter	R4080
Telscan Systems	Barcode Reader	EP
Texas Instruments	OmniLaser 2015	R4080
	OmniLaser 2106	R6000

	OmniLaser 2108	R4080
	OmniLaser 2115	R4080
TGV	Data Laser 1	R4080
	Data Laser 6	R6000
	Data Laser 8	R4080
Troy Data Corp	308	R4080
	BPPM	R4080
U.S. Lynx	LynxLaser 8PPM	R4080
	LynxLasr 15PPM	R4080
Unisys	AP 9208 Mod I	R4080
	AP 9215 Mod I	R4080
Unisys	AP 9215-1 Mod I	R4080
Varityper	LP2300	R4080
Wang	LCS-15	R4080
	LPS-8	EP

#ENDCARD

#CARD

Chapter 6...

The American Challenge

The next time your  
printer or copier service  
person says this:

"Sorry, I'll have to void the  
warranty on your equipment  
because you're not using the  
O.E.M.'s brand of toner."  
or

"I'll have to charge you  
for this service call because  
you're not using the O.E.M.'s  
brand of toner."

Do this:

Inform your service person that it is illegal to require or force the  
owner of equipment to use the Original Equipment Manufacturer's  
(OEM) brand of supplies. To make this a requirement is in violation  
of the Sherman and Clayton Antitrust Acts.

A classic example of this issue was brought before the U.S. Supreme  
Court involving IBM vs the United States. IBM leased data processing  
machines to customers with the requirement that they only use the  
tabulating cards manufactured by IBM. Their customers were  
threatened with termination of their lease if they used cards  
produced by other manufacturers. As decided by the U.S. Supreme  
Court, this requirement was held to constitute a "tying agreement"  
and was found to be in violation of the antitrust laws.

Don't be intimidated by sales or service people. Let them know that a

copier manufacturer cannot legally require, in writing or verbally, that a copier owner or lessee exclusively purchase supplies from them. In order to make this kind of requirement, they must conclusively demonstrate and prove that other brands are incompatible with their equipment.

You have the right to use the products of your choice. Inform your service representative that they have no grounds to tell you otherwise!

Show this information to anyone who insists on voiding a warranty or charging you for a service call because you weren't using the OEM's brand of toner. Protect your rights to the freedom of choice in choosing your vendors. We even have a letter from Hewlett Packard, stating you have the the right to chose!

#ENDCARD

#CARD

Chapter 6...

OEM's Recycle!?!?

by Catherine Croft of BlackLightning

Hewlett Packard, Canon, and many other vendors of the popular EP, EP-S, and EP-L machines, are now encouraging their customers to have their toner cartridges remanufactured. Finally, the big boys have admitted what we've all known for years -- recycling your empty toner cartridges makes environmental and economic sense. However, this doesn't mean that there is any price reduction from HP in the works, so remanufacturing with BlackLightning still makes the most sense, and will save you \$\$\$ while you save the environment. In fact, not only will you save more money by buying remanufactured toner cartridges from a high quality remanufacturer, but you will also have a wider selection of cartridges and be doing more for the environment than if you give them to HP or Canon. Why? Because HP is melting down and recycling some of the cartridge parts, they are not remanufacturing. The environmental credo goes: "Reduce, Reuse, Recycle!" Reduce means lower the amount of materials that you use -- conserve your resources. Reuse refers to Remanufacturing -- making something continue to serve you, rather than buying new. Recycling is the last ditch effort before you add it to the landfill -- Break it down to its components and make something new. Remanufacturing is better because it wastes less materials, and uses less energy to make the cartridge ready for use again. When you melt the parts down you lose material and waste energy compared with simply reusing the parts.

As you may remember from the August 1990 Dear Flash, HP has already stated that, "The use of non-HP toner does not affect your warranty." Dealers and service technicians are not authorized to void

a warranty because remanufactured toner cartridges were used. This validates what BlackLightning has been saying all along, "You have the right to use the products of your choice!" Don't let anyone tell you otherwise. This applies to Hewlett Packard and all other vendors of supplies and equipment. It's the law.

If you would like a complete copy of the letter from Hewlett Packard on this topic, please send a stamped self-addressed envelope to The Flash at:

HP Letter  
The Flash  
Riddle Pond Road  
West Topsham, VT 05086  
Reader Response Number 63  
#ENDCARD  
#TAG C6S15P1.pct  
#CARD  
Chapter 6...

## Copy Counts

by John Jeffries of BlackLightning

The number of copies you get from a cartridge will vary. Print coverage, machine density setting, drum type, toner type, cartridge tabs, and gapping of the cartridge will all affect copy count. The most significant factor is print coverage, that is how much toner you use up on each page. The more print coverage, the more toner used, and thus the fewer pages per cartridge.

The standardized definition of coverage, used by Hewlett Packard, Canon, Apple, and other manufacturers for copy counts, describes a short letter which covers less than one third of the page with text at 5% coverage. An EP-S cartridge normally prints out approximately 4,000 to 5,000 short letters. If printing only pages of solid text, it will run approximately 800 pages. If you print solid black pages, you'll get even fewer copies from a cartridge. On the other hand, a BlackLightning customer got 12,000 copies from his EP-S cartridge while working on a directory which had very little text per page. Changing the density dial on the printer to a lighter setting will conserve toner and make the cartridge last longer. The drum type can also make a difference. We have experienced that after ten cycles, the Emerald Drum produces more copies per fill. This is not something that we guarantee, but it is something that we have observed. Setting the tabs of the cartridge to a darker setting will cause the toner to be applied more densely using more toner per page.

Some cartridges have "page counters" or "indicators" on them that change from green to yellow to red as the cartridge is used up. These count rotations of the drum and may or may not reflect how much toner remains. Other printers give a signal saying "toner low".

Again, this may be right or not. Both of these will vary depending on the toner used per page and even the humidity for the latter type of indicator. The best bet? Use the cartridge up until it no longer gives good print. This may well be after the indicator says you're out.

Different toners used by manufacturers will provide varying yields per gram, and the gapping of the cartridge done by the technicians affects the number of copies produced. Furthermore, with graphic toners you trade yield for darker copy. The copy counts listed are approximations. Like the mileage on your car, it depends on how you drive it, where you drive it, and how you load it up.

Remember, your mileage may vary.

#ENDCARD

#TAG

#CARD

Chapter 6...

Emerald Drums

BlackLightning can replace the drum in your EP-S, EP-L, or PCmini (A15/A30) toner cartridge with an Emerald Drum which produces better copy, and more importantly, is made of polycarbonate so it resists wear and is more reliable. A great improvement over the original acrylic drums from Canon, Apple, & HP.

Drum wear has been the Achilles' Heel of the remanufacturing industry for years. BIS/CAP International, a market research firm, stated in 1988 that the short lifespan of the EP-S cartridge's drum was the most significant hurdle facing remanufacturers, preventing many consumers from remanufacturing their cartridges. The same difficulty applies to new EP-L and PCmini cartridges.

While the older Series I (CX) or EP cartridges have a large 2.44" diameter drum that typically lasts from four to six cycles, a careful failure analysis shows that the newer cartridges (~1.25" dia.) often wear out after one or two recyclings. Early failure of the drum causes lines, stray marks, and lower quality output, dampening the spirits of many a recharger and user alike.

To get beyond the two-cycle limit of the newer cartridges, a new, harder drum was needed. For over two years, researchers worked on developing just such a drum for the rapidly expanding recharging industry. In 1989, preliminary samples were distributed. We performed exhaustive tests and analysis of the candidates; first in-house and then in the field. The results are nothing short of remarkable. One Emerald Drum was reused 46(!) times, with no decrease in copy quality! A laser printer user's dream.

Up until recently the drums have been very expensive, costing upwards of \$60 each. The initial cost kept Emerald Drums out of the hands of average laser printer user, leaving it to those with the foresight to see that the actual cost is much lower because the drum does not wear as rapidly. But now, from BlackLightning, a standard Emerald cartridge remanufactured costs less than a new cartridge.

Because of the long life, quality copy, and wear-resistant properties of this drum, we want to give you a special incentive to switch your EP-S, PCmini and EP-L cartridges over to the Emerald Drum. Send us your cartridge, have it recharged and ask for Emerald Drum Amnesty (See check box on order form). We'll replace your OEM drum with the new Emerald Drum, and give you a lifetime guarantee against wear on cartridges remanufactured exclusively by BlackLightning for an additional one-time cost of \$34.95. You get the best possible copy and you'll never have to replace the drum again. One more way we aim to help you stay ahead!

#ENDCARD

#TAG C7S1P1.pct

#CARD

Chapter 7

Sponsors

Why BlackLightning?

Quality Remanufacturing - BlackLightning is not just another recharger. We do a whole lot more for you than simply refill your cartridge. We use proprietary technology developed at BlackLightning to completely remanufacture cartridges. This guarantees equal or better performance every time! With failure rates lower than that of OEM cartridges, we provide the very best. BlackLightning, where quality counts.

Complete Disassembly

Hepafilter/Ultrasonic Cleaning

Replacement of Worn & Broken Parts

Refilled with the Highest Quality Toners

Reassembly by Experienced Technicians

Fuser Wand Felts Replaced and Lubricated

Emerald Drums: Longer Life & Higher Quality

Cartridges are Fully Tested and Warranted

New Packaging for Maximum Protection

Technical Support Hotline

Continuing Technological Leadership - Do business with the company that invented the quality toner cartridge remanufacturing process and Heat Transfer Toners. BlackLightning offers the widest range of toner cartridge styles available for Canon-based print engines. We have brought you better blacks, text cartridges, color, and transfer toners. Our research staff is continually improving the process and products. We are dedicated to bringing you innovation, savings and quality!

Supporting Over 23,000 Businesses - BlackLightning serves over 23,000 businesses nationwide, from the individual user to Fortune 100 companies, hospitals, major universities, banks, and graphic

artists. People like you across the nation, in Hawaii and Alaska, Canada and other countries around the globe, rely on BlackLightning quality to keep their businesses up and running, and to present the best possible face to the world.

Unbeatable Service - Nobody offers the level of service that BlackLightning offers. Our salespeople are knowledgeable, courteous, and helpful. Our experienced production people care about their work. Our employees own the company and have a vested interest in doing the best possible job for you. We typically ship your order the same or next day, and our VIP Rush service can get you a cartridge tomorrow in most parts of the nation! Should you ever have a problem, we'll do our best to help you resolve it in a timely manner via our Technical Support Hotline 1-800-252-2599. If we are unable to resolve the problem with a cartridge over the phone, then we will have UPS pick it up at our expense in the continental US, fix it, and return it to you, all under warranty! If your cartridge was VIP Rush shipped to you, then we will rush you a replacement immediately to tide you over while yours is shipped back to us. Nobody beats BlackLightning for service and support!

We Use Our Own Products! All of the products developed at BlackLightning were originally developed for internal use. We needed a better mouse-trap for our own work, developed it, use it, and offer it to you at a savings! Since we use our own products, you can be assured of the very best.

Last But Not Least... BlackLightning offers you tremendous savings, American innovation, materials, and labor! BlackLightning remanufactured cartridges are an environmentally sound alternative to the trash can!

#ENDCARD

#TAG C7S1P2.pct

#CARD

Chapter 7...

BlackLightning Catalog

### BlackLightning's Guarantee

BlackLightning cartridges carry both the famous BlackLightning Guarantee of Satisfaction and our 365-Day Extended Parts & Labor Limited Warranty. If you are unsatisfied, just return it within 30 days for a credit or refund. (See Returns on previous page for details.) Furthermore, under our 365-Day Extended Parts & Labor Limited Warranty, if any BlackLightning product should fail under normal use, just return it to us and we'll fix or replace it, no charge! We are proud of our products and services, and stand behind them 100%! Should you ever have any trouble while using a BlackLightning product, call our Technical Support Hotline 1-800-

252-2599. Our knowledgeable customer support people and technicians will help you. When you buy from BlackLightning, you buy with the confidence of knowing that we stand behind our products! Hardware from other manufacturers is covered by their warranties. Note that OEM drums carry a 1,000 copy warranty. Emerald drums carry a life-time warranty.

#ENDCARD

#TAG

#CARD

Chapter 7...

BlackLightning Catalog

#### Commonly Asked Questions:

Will it hurt my laser printer? No, cartridges remanufactured by BlackLightning are as good or better than the original and they carry BlackLightning's Guarantee(see below).

My dealer says it'll void my warranty!?! No, remanufactured cartridges do not void your warranty. It is illegal for your dealer to threaten you with this. See p. 47 & 48 for more information, and call if they try any funny stuff!

Will I get my same cartridge? Not normally but you can if you wish. When cartridges come into our plant, they are disassembled, cleaned and used to make remanufactured cartridges. All of the parts are completely inspected and tested. Any that are worn or broken are replaced so you get only the very best.

Are there color toners? Yes, we offer many colors which you'll find on page 50 and 52.

How many copies will I get with a cartridge? This depends on the cartridge you use. Generally, BlackLightning remanufactured cartridges will give you the same or more copies as a new one. See page 48 for typical copy counts and more discussion of this topic.

What is an Emerald Drum? It's a quality replacement drum with a lifetime warrantee available for some cartridges. We strongly recommend Emerald Drums for improved reliability and print quality. You will also save money in the long run. See p. 45, 50 & 68.

What if I don't have a laser printer yet? For heaven's sake, buy one! You can now get excellent used laser printers very cheaply. See The ComputerPhile article in issue 4.1, also reprinted in the Flash Compendium 1992 and start looking in the classifieds... (See page 32 about ordering back issues of The Flash and Flash Compendium 1992 book.)

#ENDCARD

#CARD

Chapter 7...

BlackLightning Catalog



Labels & Transparencies Avery products are recognized as the best labels in the industry. They do not jam, misfeed, or gum up your laser printer.

- Automatic sheet feed from paper tray
- Flexible for tight paper path
- Heat stable, permanent adhesives
- The Avery Laser Printer Guarantee

We offer Avery labels in a variety of formats to meet all of your laser printer and copier needs:

- Address labels: 30 to a page
- Diskette labels: 3.5" and 5.25"
- Rectangular in many sizes
- Circular labels to hit the spot
- Laser safe transparencies

Type	Code	Count - Size	You Pay	List
Disk	AVLAB5196	840-3.5"	39.99	47.08
Disk	AVLAB5197	630-5.25"	39.99	47.08
Address	AVLAB5260	750-1" x 2 5/8"	9.99	10.45
Address	AVLAB5160	3000-1" x 2 5/8"	29.99	35.89
Clear	AVLAB5660	1500-1" x 2 5/6"	34.99	46.33
Rect	AVLAB5261	500-1" x 4"	9.99	10.45
Rect	AVLAB5161	2000-1" x 4"	29.99	35.89
Rect	AVLAB5262	350-1 1/3" x 4"	9.99	10.45
Rect	AVLAB5162	1400-1 1/3" x 4"	29.99	35.89
Clear	AVLAB5662	700-1 1/3"x4 1/4"	34.99	46.33
Rect	AVLAB5163	1000-2" x 4"	29.99	35.89
Clear	AVLAB5663	500-2" x 4 1/4"	34.99	46.33
Rect	AVLAB5164	600-3 1/3" x 4"	29.99	35.89
Rect	AVLAB5165	100-8 1/2" x 11"	29.99	35.89
Rect	AVLAB5267	2000-1/2" x 1 3/4"	9.99	10.45
Round	AVLAB5293	600-1 2/3" diam.	9.99	10.45
Round	AVLAB5294	300-2 1/2" diam.	9.99	10.45
Round	AVLAB5295	150-3 1/3" diam.	9.99	10.45
Transp	AVLAB5282	20-8 1/2" x 11"	12.99	14.86
AudioC	AVLAB5198	600-1 5/8" x 3 1/2"	34.99	43.59
VideoC	AVLAB5199	600-Spline/face	34.99	43.59

## Signatures & Logos

We can computer scan and vectorize your signature or logo to Postscript formats so that your laser printer can automatically print it on every document that leaves your office. Checks, forms, letters, etc. The example shown here was rendered by our artist. We can do this for you too! These graphics can be used in all of the popular wordprocessors and desktop publishing programs including MacWrite, Word, FullWrite, ReadySetGo, PageMaker, X-Press, and many more. Sign a clean, white page with a black pen in the size and orientation that you want your signature to appear (you'll be able to reposition the graphic anywhere on the page). We'll return it to you

in several formats on a diskette with instructions.

Be sure to specify Mac or PC format and supply a formatted diskette for PC.

#ENDCARD

#CARD

Chapter 7...

BlackLightning Catalog

LaserColor! - Add incredible metallic color to all your special laser printed or copied documents! Colorize! Add flash to your work! LaserColor metallic films are transferred by your laser printer or photocopier to any page printed with toner. LaserColor works on text, graphics, half tone areas, more! LaserColor even works on transparencies to produce professional quality report covers. Perfect for spot coloring fliers, cards, brochures, and reports. No additional equipment is needed. simply print a page using Graphic Toner, decide where you want a blast of color and secure a piece of the film over the type or graphics to be colored. Run the page through the laser printer on manual feed and the color adheres to toner areas when you remove the film! Each pac includes 10 sheets. Rainbow has 10 sheets, one of each color + extra sheet of gold, blue, & red.

Code	Description	Qty 1
MMLCR7PRB	Rainbow 10 Pac	19.95
MMLCR1P	GD Gold 10 Pac	
MMLCR1P	RD Red 10 Pac	
MMLCR1P	BL Blue 10 Pac	
MMLCR1P	GR Green 10 Pac	
MMLCR1P	SL Silver 10 Pac	
MMLCR1P	VI Violet 10 Pac	
MMLCR1P	TQ Turquoise 10 Pac	

#ENDCARD

#CARD

Chapter 7...

BlackLightning Catalog

## Printer Supplies

### Corona Wire Cleaners

Most Canon-based laser printers come with a cartridge corona wire cleaning tool. Proper maintenance is an important step toward perfect copies every time. The EP-L cartridges do not have corona wires.

Type	Code	Description	Qty 1
EP/PC	CAEPOCWCT	CX/Copier	3.99
EP-S	CAEPSCWCT	SX Laser	4.99

Fuser Wands - Most new and all remanufactured cartridges (except EP-L) come with a fuser wand which acts like the oil filter in your car. It cleans and lubricates your laser printer or copier as it runs. Additional wands may be necessary if you do unusually heavy graphics or use rough paper.

Type	Code	Description	Qty 1
EP	BLEPOWFO0	CX/Copier	4.99
(also use with EP-F, PC, MP-N, MP-P)			
EP-S	BLEPSWFO0	SX Laser	4.99
A15/A30	BLPC1WFO0	µCopier	6.99
EP	BLEPOWF5P	5 Spare felts	5.00
EP-S	BLEPSWF5P	5 Spare felts	6.00

Separation Belts - Replacement for broken or worn paper separation belts in Series I laser printers (EP) and photocopiers (PC). Helps prevent jamming in paper path.

Type	Code	Description	Qty 1
EP/PC	CAEPOBT00	Sep. Belt	4.99

2 per pack

Fuser Roller Kits - Replace broken or damaged fuser rollers and heater lamps. Replacement should be performed by a qualified technician.

Type	Code	Description	Qty 1
CX/PC	AMEPOFSKT	Roller & Lamp	69.99
SX	AMEPSFRKT	Roller & Lamp	69.99
SX	AMEPSFSKT	Complete Assembly	299.99

Add \$50 deposit for AMEPSFSKT refunded on receipt of old complete fuser assembly if within 30 days of invoice.

Cleaning Fluid - Cleans, revitalizes and softens aged or hardened rubber rollers. A must for the aging laser printer or photocopier. Helps prevent jams, marks, and misalignment.

Type	Code	Description	Qty 1
Cleaner	TSFED8000	Cleaning Fluid 8oz.	9.99

#### Paper Trays

Type	Code	Description	Qty 1
EP/PC	HPEPOPTOP	Output	17.95
EP/PC	TAEPOPTIL	Input Letter	54.99
EP/PC	TAEPOPTIG	Input Legal	54.99
EP-S	TAEPSPTIG	Input Legal	64.99

#ENDCARD

#CARD

Chapter 7...

BlackLightning Catalog

Ozone Filters - Laser printers and copiers produce ozone gases during normal operation. Excess ozone causes headaches and is dangerous to your health. The filters must be replaced periodically to maintain proper operations. Normally this is expensive and requires a service

call from your dealer. With our new Snappy Filters you can do the job yourself in seconds and for a whole lot less. Check the compatibility chart for help.

Type	Code	Replace after pages	Qty 1
EP/PC	FAEPOSNAP	30,000 Apple	29.95
EP/PC	FAEPOSNHP	30,000 HP	29.95
For Series II manufactured prior to 7/89.			
EP-S	FAEPSSNAP	25,000 Apple	29.95
EP-S	FAEPSSNHP	25,000 HP	29.95

Older model machines do not have a green duct door.

For Series II manufactured after to 7/89 and Series IID & III.

EP-S	FAEPSSNA2	50,000 Apple	12.95
EP-S	FAEPSSNH2	50,000 HP	12.95

Newer model machines do have a green duct door in front of the filter area.

InkJet Refills - Better blacks than the original and brilliant colors at BlackLightning's low, low prices! Superior quality ink. Easy economical refills.

Type	Code	Description	Qty 1
InkJet	GUIJT02BK	Black 2 pack	19.95
InkJet	GUIJT02BL	Blue 2 pack	23.95
InkJet	GUIJT02BR	Brown 2 pack	23.95
InkJet	GUIJT02GR	Green 2 pack	23.95
InkJet	GUIJT02RD	Red 2 pack	23.95

DeskJet, DeskJet Plus, DeskJet 500, BubbleJet

Think	GUTHJ7PBK	Black 7 pack	49.95
-------	-----------	--------------	-------

ThinkJet, QuietJet, Diconix150 PLAIN PAPER

Think	GUTHJ7IBK	Black 7 pack	49.95
-------	-----------	--------------	-------

ThinkJet, QuietJet, Diconix150 INKJET PAPER

OPC Kits - New OEM Ricoh 4080 OPC kits for 4080 based laser printers at low prices!

Type	Code	Description	Qty 1
R4080	RXOPC4080	Ricoh 4080	169.95
R4081	RXOPC4081	Ricoh 4081	169.95

12" LaserRules - A must for the desktop publisher & anyone using laser printers and typesetters. Flexible, white vinyl two sided rulers with point, pica, centimeter, and inch measures on two edges. On the front are unit conversion tables, multiple resolution graduations, line width samples and more. The back has font examples to aid in matching. Rulers come with complete instructions on how to use each and every one of their features.

Code	Description	Qty 1
BLLSRRULE	LaserRules	4.95

#ENDCARD

#CARD

Chapter 7...

BlackLightning Catalog

## Printer Supplies

### Returns & Tech Support:

Should you have any problems with a product we sell, first check your operating instructions and literature. If you are unable to resolve the problem, call our Tech Support Hotline (1-800-252-2599) and we will work to resolve the problem promptly. If we are unable to do so, we will provide you with an RMA number. If the cartridge is under warranty and being returned for repair or replacement, we can have UPS pick it up for return to us at our cost in continental USA. If you wish to return a product under the 30-Day Satisfaction Guarantee, simply call for an RMA number and return the product within 30 days of purchase. On unopened products we will issue a cash refund based on the purchase price. On opened products we will issue a credit or refund for the unused portion. All returns must be accompanied by an RMA number clearly written on the outside of the box to assure a speedy resolution and maximum credit. Returns subject to a 20% restocking fee. We can not accept returns on custom products.

#ENDCARD

#CARD

Chapter 7...

BlackLightning Catalog

### Sending In Your Empties

Bag your empty cartridge and place it in the end-blocks with the dirty wand, (EP-L cartridges do not have wands) then in a box with an order form or letter saying what you would like done. Ship it to us via your favorite carrier (ie. UPS, USMail, etc) to the address on the front cover of this magazine. Include your name, address, and phone number in case we need to contact you about your order. The above drawings show a CX laser printer and EP cartridge. Yours may look different.

#ENDCARD

#CARD

Chapter 7...

BlackLightning Catalog

## Toner Cartridges

New - New toner cartridges for laser printers and photocopiers under the BlackLightning brand name. OEM product codes starting with CA. Others are from third party manufacturers and are equal to or better than OEM toners.

Type	Code	Description	Qty 1	≥4
EP3	CAEPONOBK	CX Laser	99.99	89.99
EP-L3	CAEPLNOBK	LX Laser	94.99	89.99

EP-S4	CAEPSNOBK	SX Laser	99.99	89.99
PC1	CAPCONOBK	Copier	94.99	89.99
A151	CAPC1NOBK	µCopier	89.99	79.99
A303	CAPC3NOBK	µCopier	129.99	119.99
R60001	RX600NOBK	Black	19.99	18.99
R60001	RX600NORD	Red	24.99	23.99
R60001	RX600NOBL	Blue	24.99	23.99
R60001	RX600NOGR	Green	24.99	23.99
R40804	RX408NOBK	2 Blacks	59.99	56.99
Kyocera3	KXLF1NOBK	2 Blacks	59.99	56.99
TEC1305	TE135NOBK	2 Blacks	37.99	35.99
Sharp9500	SH950NOBK	Black	44.99	42.99
NEC890	NE890NOBK	Black	18.99	16.99
Panas4450	PA445NOBK	Black	39.99	37.99

Standard† - BlackLightning's low abrasive toner. Equivalent OEM quality and copy count at tremendous savings.

Type	Code	Description	Qty 1	≥4
EP3	BLEPOSOBK	CX Laser	54.99	52.99
EP-S4	BLEPSSOBK	SX Laser	59.99	57.99
A151	BLPC1SOBK	µCopier	54.99	52.99
A303	BLPC3SOBK	µCopier	59.99	57.99
MP-N3	BLMPNSOBK	Microfiche	59.99	57.99
MP-P3	BLMPPSOBK	Microfiche	59.99	57.99

Emerald Drum recommended in all cartridges.

Long Life†- 40% more toner of our special low abrasive toner. Extra savings!

Type	Code	Description	Qty 1	≥4
EP4	BLEPOLLBK	CX Laser	59.99	57.99
EP-F4	BLEPFLLBK	Fax	69.99	67.99
PC2	BLPCOLLBK	Copier	59.99	57.99
PC-302	BLPCOLLBK	Copier	69.99	67.99
A152	BLPC1LLBK	µCopier	59.99	57.99
A302	BLPC3LLBK	µCopier	69.99	67.99
MP-N4	BLMPNLLBK	Microfiche	69.99	67.99
MP-P4	BLMPPLLBK	Microfiche	69.99	67.99
IBM4019	BLIBMSOBK	IBM laser	99.99	97.99

Equivalent to IBM's long life. IBM cartridges are not machine tested.

Emerald Drum recommended in cartridges EP, EP-S, EP-L, A15, A30

Graphic†4 - BlackLightning's extra dark toner designed to give the ultimate in rich black copy. Give your reports that extra edge.

Type	Code	Description	Qty 1	≥4
EP	BLEPOGRBK	CX Laser	69.99	67.99
EP-S	BLEPSGRBK	SX Laser	69.99	67.99

Emerald Drum recommended in all cartridges.

Text†4 - For fine lines and small print. Graphics & very large print

may appear lighter.

EP	BLEPOTXBK	CX Laser	69.99
----	-----------	----------	-------

EP-S	BLEPSTXBK	SX Laser	69.99
------	-----------	----------	-------

Emerald Drum recommended in all cartridges.

#ENDCARD

#CARD

Chapter 7...

BlackLightning Catalog

## Toner Cartridges

MICR†4 - Requires special fonts, readers, and knowledge to use. If you need to ask how, then you do not need this toner. No warrantee as to magnetic properties.

EP	BLEPOMIBK	CX Laser	169.99
----	-----------	----------	--------

EP-S	BLEPSMIBK	SX Laser	169.99
------	-----------	----------	--------

Requires Emerald Drum

Hi-Res†4 - For use with high resolution printers such as those from Apple, LaserMaster, Xante, etc. Designed with a smaller, even particle size for enhanced resolution.

EP	BLEPOHRBK	CX Laser	99.99
----	-----------	----------	-------

EP-S	BLEPSHRBK	SX Laser	99.99
------	-----------	----------	-------

EP	BNEPOHRBK	New - No trade-in	174.99
----	-----------	-------------------	--------

EP-S	BNEPSHRBK	New - No trade-in	174.99
------	-----------	-------------------	--------

Requires Emerald Drum

Color†2 - Give your presentations the extra pizazz that color lends. We strongly recommend Emerald Drums for optimal performance with color toners. With BlackLightning color cartridges you can easily switch cartridges without having to runout any color residue. Print multiple colors to a page for snazzy graphics! Color cartridges do not print as darkly as Graphic toner. Wedgewood Blue includes special care instructions for drum care.

Substitute cartridge (EP, EPS, EPL) for --- in the code below.

EP-L is only available as new cartridges as per below.

Substitute color code for ++ in the code below. Creme Brown (BR), Chocolate Brown (CB), Wedgewood Blue (BL), Turquoise Blue (TQ), Burgandy (dark, brick red) (BU), Forest Green (GR)

BL---CO++	Remanufactured Color	89.99
-----------	----------------------	-------

BN---CO++	New Color - No trade-in	149.99
-----------	-------------------------	--------

Requires Emerald Drum in EP-S and EP-L

BLIBMCO++	Color IBM 4019	139.99
-----------	----------------	--------

Red (RD), Blue(BL), Brown(BR), Green(GR)

## Drums & Emeralds

Cartridge drums are the imaging component. Refurbished drums are used OEM - Original Equipment Manufacturer drums that have been cleaned and polished and guaranteed in our remanufactured cartridges for 1,000 pages. Because the original drums are soft

acrylic and wear out faster we do NOT recommend using them if an Emerald Drum is available for your cartridge. See page 45 on Emerald Drums.

Type	Code	Desc.	Warrantee	Qty 1	
EP/MP--N	BLEPSRFDM	OEM Drum	1,000 pgs	9.00	
PC/MP--P	BLPCORFDM	OEM Drum	1,000 pgs	9.00	
EP-S	BLEPSRFDM	OEM Drum	1,000 pgs	9.00	
A15/A30	BLPCMMDM	OEM Drum	1,000 pgs	9.00	
EP	BLEPOEMDM	Emerald	Lifetime	44.95	
\$34.95 with Graphic, Text, MICR, Color, or Transfer					
EP-S	BLEPSEMDM	Emerald	Lifetime	34.95	
EP-L	BLEPLEMDM	Emerald	Lifetime	34.95	
A15/A30	BLPCMMDM	Emerald	Lifetime	34.95	

These prices good when installed in a BlackLightning cartridge.

OEM drums are limited by availability and may be backordered.

#ENDCARD

#CARD

Chapter 7...

BlackLightning Catalog

Toner Cartridges footnote

† Prices based on exchange of empty cartridge, wand & packaging in good condition. Otherwise add \$10.

New products in bold type. All cartridges and drums remanufactured unless otherwise noted.

Copy counts vary based on toner coverage and machine density setting used. Your mileage may vary.

1~1,500 copies 2 ~2,000 copies 3 ~3,000 copies 4~4->5,000 copies

See Copy Counts on page 48.

#ENDCARD

#CARD

Chapter 7...

BlackLightning Catalog

Transfer Services

We can reproduce photographs, drawings, artwork or computer graphics on a variety of products using our Transfer Toner technology. We will color separate your photos or artwork to create full color transfers. The prices below are for most projects where you provide us with camera ready artwork. See the example projects below. Then simply follow the easy, step-by-step order form on page 59. Design sizes are in parenthesis after item names. Larger designs on apparel can be accommodated with an Additional Design. On apparel, designs may be placed on the back, front, sleeve, cuff, & pocket.

To use the chart below, simply match the product you want to the quantity you are ordering for the base price of the first color. Next,



add in the cost per item for each additional color. For full color photos & artwork add three more colors for a total of four. Additional products are available in the Non-Stock items chart on the next page.

#ENDCARD

#TAG C7S2P1.pct

#CARD

Chapter 7...

BlackLightning Catalog

## Transfer Services

To receive these low prices artwork must be camera ready. Single color items should be in black ink on bright white paper. Multicolor items should be in their respective colors on one composite page. High contrast images will give the best results. We also accept images on 3.5" Mac & PC disks in the following formats: ReadySetGo, TIFF, MacDraw, MacPaint, Illustrator, & PhotoShop. Files should be print ready and clearly labelled. Include any special fonts as font files or outlines. Be sure to keep a backup of all artwork. We attempt to return all originals, but can not be responsible for their loss or damage.

Our artists can create or modify a design at the rate of \$45/hr billed by the quarter-hour. Simple jobs like curved text might be 15 minutes.

Full scale mockups are available at the Q1 pricing and are 75% deductible against orders placed within 30-days of Q12 or greater for that same item.

#ENDCARD

#TAG

#CARD

Chapter 7...

BlackLightning Catalog

## Transfer Services Design Colors

Design Colors:

Black	Blue	Red	Green	Yellow	Magenta
Burgundy	Orange	Purple	Brown	Goldrod	

No guarantee is made as to exact color matching.

#ENDCARD

#CARD

Chapter 7...

BlackLightning Catalog

## Transfer Services Example 1

Example #1:

Full Color Photo Mugs

5 white mugs with full color photos would cost \$13.50 each. That's \$9.00 for the mug and first color at quantity 4, plus \$1.50 for each

other three colors to do a four color separation. Total cost including shipping & handling: \$71.50

#ENDCARD

#CARD

Chapter 7...

BlackLightning Catalog

Transfer Services Example 2

Example #2: Complex T-Shirt

15 T-shirts with a three-color design on the front and a different two-color design on one sleeve would cost \$9.98 each. That's \$6.20 for the first color (Q12) and 2x75¢ for the next two colors on the front plus \$1.53 and 75¢ for the second design in two colors. If you wanted the second design on the other sleeve as well you would add 49¢ for the additional placement. Total cost for order with both sleeves done, including shipping: \$165.05.

#ENDCARD

#CARD

Chapter 7...

BlackLightning Catalog

Transfer Services Example 3

Example #3: Paper Transfers

If you wanted to get 30 two color transfers made, so you could press them yourself, they would cost \$2.40 each. That's \$1.90 plus 50¢ for the second color. The total cost including shipping & handling: \$76.00. To have the image kept on our computers for five years you would add \$5 to the order. Then you could just call to reorder.

#ENDCARD

#CARD

Chapter 7...

BlackLightning Catalog

Transfer Services Nonstock

Non-Stock Items	Styles	Sizes	Colors
T-Shirt	Pocket (+\$2), Long Sleeve (+\$2)	XXL(+ \$2),	Child's S, M, L (+\$1)
	Lt Green, Yellow, Polo with pocket (+\$2)		
Sweat Shirt	Sweat Pants (+\$1), Hooded (+\$5)	XL, XXL(+ \$4),	
Child's S, M, L (+\$1)	Lt Blue, Red, Orange		

Medallion Brass Business Card (+50¢)

Caps Cloth Backed Caps, Visor Caps Orange, Green, Yellow

#ENDCARD

#CARD

Chapter 7...

## BlackLightning Catalog

### Transfer Services On-Line

On-Line Storage: For \$5 we will store your design on our computer system for five years after your order. You can easily place additional orders with just a phone call. This saves you time, so you get your products faster.

#ENDCARD

#CARD

Chapter 7...

## BlackLightning Catalog

### Transfer Services Price Chart

Per Piece Costs:	Quantity 1	Qty2	Qty4	Qty12	Qty24
Mug (3"x7")	26.50	14.80	9.00	5.10	4.10
T-Shirt (10.7"x8")	27.60	15.90	10.10	6.20	5.20
Sweat Shirt (10.7"x8")	33.50	21.90	16.00	12.20	11.20
Plaque or Mouse Pad (~6"x8")	35.20	18.50	12.70	8.00	6.90
Medallion (1" or 2" diameter)	25.70	13.00	7.20	3.00	2.10
Fridge Magnets (1" or 2" dia.)	25.80	13.10	7.30	3.25	2.50
Paper Transfers (10.5"x8")	24.20	12.50	6.70	2.80	1.90
Caps with Mesh Back (3"x6")	26.30	14.60	8.80	4.90	3.90
Additional Colors	2.00	1.75	1.50	0.75	0.50
Additional Design (first color)	18.33	9.17	4.58	1.53	1.49
Additional Placements	1.67	0.83	0.49	0.49	0.49

#ENDCARD

#CARD

Chapter 7...

## BlackLightning Catalog

### Transfer Services Stock Chart

Stock Items	Sizes	Colors
Mug	11oz Coffee	White, Off White (-25¢)
T-Shirt	M, L, XL	White, Grey, Red, Blue, Silver, Pink
Sweat Shirt	L	White, Grey
Plaque	Brass, Alum.	Silver, Bronze, or Gold in Aluminum
Medallion	1", 2"	Brass Premium Metal
Fridge Magnets	1", 2"	Brass Premium Metal
Caps	Adult	White, Blue, Red, Grey, Pink
Mouse Pad	9.25"x7.5"	Silver

#ENDCARD

#CARD

Chapter 7...

## BlackLightning Catalog

### Transfer Services Stock

Non-stock styles, sizes, and colors may be mixed and matched with stock sizes and colors: ie. Hooded Adult Large Orange Sweat Shirts are available. Non-stock orders must be in multiples of one dozen per style & color or there is a \$2 per item surcharge. Please allow ten extra working days for non-stock items. If a stock item is temporarily out of stock, allow an extra two weeks. Adult sizes unless otherwise noted.

#ENDCARD

#CARD

Chapter 7...

BlackLightning Catalog

### Transfer Services Terms

#### Terms:

\$25 minimum order. All orders must be prepaid by check, money order, or Visa/MC. Add 5% sales tax in Massachusetts and Vermont. UPS Ground shipping and handling in continental USA is \$4 per project dozen. Round up partial dozens. USMail, FedEx, UPS 2nd Day, and UPS Next Day Air are available.

Please allow two to three weeks for delivery.

Rush orders can normally be accommodated and have a 5% (\$15 minimum) rush charge. We assume the design is to be printed on the front of apparel unless otherwise specified. Excessively complex designs or designs with excessive coverage may have a surcharge of 10 to 50%.

Other products can be done on special order. Write or fax a project description for a quote.

#ENDCARD

#CARD

Chapter 7...

BlackLightning Catalog

### Transfer Supplies

Heat Presses - Transfers can be done in a limited manner with a household iron. Top-of-the-line Knight heat presses produce consistent professional heat transfer results. Heavy-duty construction. 120V, built-in timer, adjustable pressure linkage system, and temperature control. If you are going to make your livelihood with transfers then get the very best.

Type	Code	Description	Platen size	Qty 1
Cap	GKCAP1780	Cap Sealer	4"x7"	495
Shirt	GKSRT475S	Econo-Shirt	12"x14"	695
Shirt	GKSRT674A	Ultra Shirt	16"x20"	1050
Shirt	GKSRT785T	Twin Shirt	14"x16"	1150

Mug GKMUG2000 Mug AutoPress 1795

#### Transfer Metals - Colored

aluminum and brass metal plates for heat transfers. Signs, desk plates, name tags, awards, incentives, and promotions. Our premium metals give the highest quality results with rich colors and densest blacks. UV resistant. Try the brass. Its smooth surface and consistent warm color shows off your work.

Type	Code	Color/Shape & Size	Qty 1	≥4
UVA	NCALMUVGD	Gold clr 12x24"	7.99	7.49
UVA	NCALMUVSV	Silver clr 12x24"	7.99	7.49
UVA	NCALMUVBZ	Bronze clr 12x24"	7.99	7.49
Brass	CPBRART00	Rectangle 12x24"	15.99	15.49
Brass	CPBRASH00	Shield ~6"x8"	13.99	13.19
Brass	CPBRAC00	Cat Eye 3.25"	0.99	0.85
Brass	CPBRALN00	Lens 4"	1.25	1.15
Brass	CPBRAWV00	Wave 4.75"	1.25	1.15
Brass	CPBRATG00	Tag 2.25"x3.5"	0.89	0.65
Brass	CPBRADC02	Disc 2"	0.75	0.39

Mugs - High quality, dishwasher safe, coated 11 ounce ceramic coffee mugs for use with our Transfer Toner and the above mug press.

Premium White mugs are a smooth bright white. Promotional mugs are offwhite and not printable at edges. These mugs are specially coated to work with Transfer Toner.

Code	Description	Qty 1	12	36
DTMUGPRWT	Premium White	4.99	3.99	2.99
DTMUGPONW	Promo Off-White	4.59	3.59	2.59

TransClean - Removes all the toner but leaves the dye! Solvent cleans most surfaces. Especially useful for removing toner residue from metal plates & mugs after transferring.

Code	Description	Qty 1
TSTCL8000	Cleaning Fluid 8oz.	9.99

Mouse Pads - Silver 9.25" x 7.5" x 0.25". 100% polyester surface takes transfer dyes beautifully to produce a rich vibrant image on a ideal mousing area for your computer.

Code	Description	Qty 1
MTMPDMSV	Silver Mouse Pad.	4.99

See p. 6, 13, 42 for more Transfer info.

#ENDCARD

#CARD

Chapter 7...

BlackLightning Catalog

#### Transfer Supplies

Apparel - Quality clothing appropriate for use with heat transfer toners. Show off your work at its best! Pre-Sprayed shirts are available for those not wanting to buy a sprayer for a small run of transfers.

Type	Code	Description	Qty 1	≥12
Caps	ADCAP	Baseball style	2.50	1.99
Shirts	ADPRE	Pre-Sprayed Shirt	5.99	5.49
Shirts	ADSBT	Screen Stars Best	4.49	3.49

White, lt Blue, Red, Gray, Silver, Pink in adult S, M, L, XL.

Prep Spray - Allows you to transfer onto materials low in polyester and brightens the colors on 50/50 shirts. Produces sharper, more vibrant, fade resistant colors. One quart produces one gallon and does ~200 items. Prep spray must be applied with a sprayer such as the NCASBADVD below which uses replaceable Power Pac NCASBPWPC.

Power Pac = Ozone Friendly

Type	Code	Description	Qty 1
Cloth	TXSBP3200	1qt Cloth Prep Spray	25.99
Metal	NCSBPMTCR	1qt for Metal/Ceramic	25.99
Sprayer	NCASBADVD	Advanced Spray Bottle	19.99

includes 1 power pac NCASBPWPC below

Power	NCASBPWPC	Power Pac for NCASBADVD	11.99
-------	-----------	-------------------------	-------

Transfer Fuser Felts - Five-packs of transfer felts are available for use with transfer cartridges. These felts have a special coating and dimensions that reduce streaking and background when used with transfer cartridges. EP-L cartridges do not use felts.

Code	Description	Qty 1
BLEPSXF10	10 Pack	7.00
BLEPSXF50	50 Pack	25.00

Desiccants - For the best results with your transfer cartridge, change the desiccant when the 40 indicator turns pinkish.

Code	Description	Qty 1
UMDESPC25	5 pack of desiccants	1.99
UMDESINDC	Extra humidity indicator	1.00

Transfer Sample Kits - This is what to buy if you want to see a more substantial piece of work than the samples we provide for free. It contains a full color design transferred on a mug or t-shirt, full-page full-color transfer to try, small cloth sample, small premium metal sample, description on how the mug or t-shirt was made, literature on equipment necessary to get set up doing transfers, and a \$10 rebate brass medallion towards your purchase of a transfer cartridge. Only \$14.95 after rebate.

Type	Code	Description	Qty 1
Shirt	BLTSSKTTS	T-Shirt Sample	24.95
Mug	BLTSSKTMG	Mug Sample	24.95
Both	BLTSSKTTM	T-Shirt & Mug Sample	34.95

If you're interested in Transfer Toner, buy the Flash Compendium on page 34.

#ENDCARD

#CARD

Chapter 7...

BlackLightning Catalog

## Transfer Toner

After years of intensive research, BlackLightning developed a special type of toner for laser printers containing a sublimation dye. With our Laser Transfer Toner you print your graphics in mirror image on your laser printer using plain paper and your choice of graphics software. Heat press the resulting image to transfer the sublimation dyes to fabrics, metals, ceramics, T-shirts, jackets, leather, wood, plastics, vinyl, polyesters, and many other materials. Allow it to cool and when you remove the paper, you will reveal your image in color on the destination surface. Do multi-color artwork, even four color photographic separations, on a vast array of objects with multipass printing. Read the Transfer Secrets section and get the Compendium (p. 34)!

BlackLightning produces cartridge capacities to fit everyone's needs. The Economy is a low cost, low capacity product for the casual user. The Professional, with more toner and an Emerald Drum (EP-L & EP-S) for the more serious user, will produce more, higher quality copies. The Emerald is available in the Economy, and will improve the copy quality and drum life.

We sell direct in foreign countries and have distributors in some countries. Interested in an exclusive distributorship for BlackLightning products in your country? Call (802) 439-6462 or fax (802) 439-6463.

### Call for Free Samples

We provide a limited number of free samples of transfer on paper & cloth. For more complex samples, see the next page for T-shirt and mug Transfer Sample Kits which include a wide range of samples and information for only \$14.95 after rebate. Also See Transfer Services. Other Machines - From time to time we provide free 10 gram samples of Transfer Toner for testing in other types of laser printers. Customers have found that the Transfer Toner we designed for use in the Canon laser printer engines also works in Kyocera and PrintWare machines. We have not tested this ourselves and can make no warranty as to the fitness.

New Transfer Cartridges -- You can now purchase brand new, unused transfer toner cartridges. This is most important for EP-L customers due to the shortage of used EP-L parts. Emeralds are available for new.

#ENDCARD

#CARD

Chapter 7...

BlackLightning Catalog

## Transfer Toner

Stock Colors - Use these colors to produce others with half tones and over printing. Third through fifth letters of item code specify cartridge type. Last two letters specify color. ie.

BLEPOXERD would be an EP cartridge (EPO), Transfer (X), Economy

(E), Red (RD)

Transfer is available for EP, EP-S, & EP-L

Economy† - For the person on a budget. Approximately 400 copies. A perfect intro to joy & potential of transfer toners.

Code	Description	Qty 1
BL---XE--	Economy	79.99
BL---XE05	5 Pac Economy	299.99
BN---XE--	New Economy	144.99
BN---XE05	New 5 Pac Economy	674.99

Economy transfer cartridges may optionally have an Emerald Drum added for the one time cost of \$34.95 per cartridge. EP-L is only available in new.

Professional† - High capacity cartridge designed for the serious user. For the ultimate in quality. The Professional has an Emerald Drum, and will print approximately 2,200 copies per cartridge for the lowest per copy cost, maximizing your profits. With copier-based and other transfer systems where you must use special release papers, your cost can be as much as \$3 per transfer. BlackLightning's plain paper toners reduce your cost to less than 15¢ each! Plus you get all the advantages of computer graphics and typesetting. A great deal in every way!

Code	Description	Qty 1
BL---XP--	Professional	264.99
BL---XP05	5 Pac Pro	999.99
BN---XP--	New Professional	329.99
BN---XP05	New 5 Pac Pro	1374.99

Professional transfer cartridges sold only with Emerald Drums and require a \$34.95 one time purchase for each Emerald Drum added to price. EP-L is only available in new. New Professional and Economy cartridge prices include all parts costs and do not normally use Emerald drums. Emerald drums may be requested with New.

5-Pacs consist of four Transfer Toner cartridges in the colors of your choice and one non-transfer Graphics cartridge for proofing to avoid wasting transfer toner. A great way to get started & save. Use the savings to buy yourself Emerald Drums!

#ENDCARD

#CARD

Chapter 7...

BlackLightning Catalog



Transfer Toner

Buy direct from BlackLightning!

#ENDCARD

#TAG C7S3P1.pct

#CARD

Chapter 7...

Sponsors

Classic Clipart Collection Ad

#ENDCARD

#TAG C7S4P1.pct

#CARD

Chapter 7...

Sponsors

Front Porch Computers Ad

#ENDCARD

#TAG C7S5P1.pct

#CARD

Chapter 7...

Sponsors

Sugar Mountain Ad

#ENDCARD

#TAG C7S6P1.pct

#CARD

Chapter 7...

Sponsors

Midnight Engineering Ad

Midnight Engineering

1700 Washington Ave.

Rocky Ford, CO 81067

(719) 254-4558 work

(719) 254-4517 FAX

#ENDCARD

#TAG C7S7P1.pct

#CARD

Chapter 7...

Sponsors

Grantham Ad

#ENDCARD

#TAG C7S8P1.pct

#CARD

Chapter 7...

## Sponsors

### Home Power Ad

Solar Electric, Hydro Power & more

Write or Call:

Home Power Magazine

POB 130, Hornbrook, CA 96044

(916) 475-3179

#ENDCARD

#TAG

#CARD

Chapter 7...

Get Free

Information

Use the enclosed Reader Response Card to request free information on the products you're interested in. Simply circle the Reader Response Number for the vendors you want information from. You can even fax your card in at (802) 436-6463 for the faster service.

#ENDCARD

#CARD

Chapter 7...

### Classifieds

Beautiful 1880's Large Queen Anne attached El & Barn. Slate roofs, hvly insltd all sections, Elgnt wdwrk, Bay wndws, huge attic, garden, berries, asparagas, rhubarb, & hot frame, full cellar, spring water. One Acre of field. Addtnl land avlbl. Scenic Hartland, VT near Woodstock, VT, Hanover, NH, & the junctions of I89 & I91. Call (802) 476-3309 Walter.

FOR SALE - HACKER HAMMER Antistatic foam hammer helps relieve frustration, monotony, with palmtop, micro, mini or mainframes. All languages. Only \$9.95+\$3.05 shipping & handling from Larry Harkness, POB3609, Kansas City, KS 66103

WANTED - Sharp FO-333 Fax Machine in excellent condition or as parts for repairs. Call (802) 439-6600 John.

Classifieds in The Flash cost just \$2/line. (33 char/line using 8pt Courier.) First line in bold. Payment due at time of ad placement. Flash Classifieds, BlackLightning, Riddle Pond Rd, West Topsham, VT 05086

The editors reserve the right to reject any material for any reason.

#ENDCARD

#CARD

Chapter 7...

## Classifieds

### Beautiful 1880's Queen Anne

Large house with attached El and Barn. Slate roofs, heavily insulated in all three sections (House, El, & Barn), Elegant woodwork, Bay windows, huge attic, large garden, berry bushes, asparagus, rhubarb, & hot frame, full cellar, spring water. One Acre of fields around house. Located in scenic Hartland, Vermont near Woodstock, VT, Hanover, NH, & the junctions of I89 & I91. For sale by owner. Addtnl land avlbl

Call (802) 476-3309 Walter.

### FOR SALE - HACKER HAMMER

Antistatic foam hammer helps relieve frustration, monotony, with palmtop, micro, mini or mainframes. All languages. Only \$5.95 plus \$2.95 shipping & handling from Larry Harkness, POB 3609, Kansas City, KS 66103

### WANTED - Sharp FO-333 Fax Machine

in excellent condition or as parts for repairs.

Call (802) 439-6600 John.

Classifieds in The Flash cost just \$2/line. (33 char/line using 8pt Courier.) First line in bold. Payment due at time of ad placement.

## Flash Classifieds

BlackLightning, Inc.

Riddle Pond Road

West Topsham, VT 05086

The editors reserve the right to reject any material for any reason.

#ENDCARD

#CARD

Chapter 7...

## Flash Mailing List

### NOT FOR SALE

It has always been BlackLightning's policy NOT to sell our mailing list. Your address is safe with us. We will never be a source of junk mail in your box because we don't give your address out unless you ask us via the Reader Response Numbers. For those who wish to reach our readers, we do have a limited amount of advertising space in each issue of The Flash. Reach over 18,000 computer and laser printer users at very reasonable rates as shown below.

### Advertising Sizes, Rates & Deadlines:

Twelfth Page      2 3/8" x 1"      \$125

Sixth Page        2 3/8" x 2 1/4"      \$200

Quarter Page	2 3/8" x 3 1/2"	\$275
Half Page Vertical	2 3/8" x 7 1/2"	\$400
Half Page Horizontal	5" x 3 1/2"	\$400
Full Page	5" x 7 1/2"	\$700

Reservation deadlines are:

Winter - December 1st,

Spring - March 1st,

Summer - June 1st,

Fall - September 1st.

Classified Ads: Just \$2 per line

For more information call us at  
1-800-252-2599 and ask for a  
Flash Advertisers Media Kit.

Circle Reader Response Number 56

#ENDCARD

#TAG C7S12P1.pct

#CARD

Chapter 7...

Sponsors

MMCC Ad

Get Real...

Get Lite...

Get an Outbound!

[Picture 1]

The Outbound Notebook series are Macintosh Compatible and fully authorized by Apple Computer, Inc. Travel lightly and get a load of work done. Use it as your desktop machine and save \$\$\$ because you won't need a second machine or a battery backup unit to protect your important data during blackouts!

And, Outbounds purchased from MMCC, Inc. come with The Electronic Notebook a productivity enhancing stack that helps you organize your notes, pictures, and contacts.

Furthermore, Outbound Notebooks are fully upgradable by processor, clock speed, RAM, and hard disk. Just checkout the prices, options, and features below:

Size: 8.5"x11"x2.1"

Weight: 6.25 lbs. with battery & hard drive

Screen: Backlit, 10" LCD 640 x 480

Trackbar Pointing Device: Optically encoded, adjustable acceleration & scaling. ADB mouse and other devices may be added to system.

Floppy Drive: 1.4 MB 3.5 inch reads & writes 400KB, 800KB, 1.4MB

Macintosh disks as well as 720KB and 1.44MB PC.

Battery: Up to 3 hour operating time

AC Power: Universal 100-240VAC, 50-60 Hz

System RAM: 2MB, 4MB, 8MB, or 14MB based on configuration. Uses inexpensive, widely available, standard SIMM's.

Silicon RAM Disk: 0 to 50MB via SIMM's.

Power Conservation: Low-power sleep mode, restored to exact work in progress state with any keystroke. Screen brightness and contrast user adjustable in software and from keyboard. CPU standby. Hard disk spin down.

Interfaces: Fully Mac compatible: Printer port, Modem port, SCSI port, ADB port for external keyboard and/or mouse, Ext mic & sound-out.

Standard Extras: Carrying handle, slip case

Operating System: Macintosh 6.0.7 or 7

Warranty: 1 year limited parts & labor

Processor: 68000 or 68030 at 20, 25, or 33Mhz

Floating Point Unit (FPU): with 68030

Hard Drives: 20MB, 40MB, 60MB, 80MB, 120MB

Virtual Memory: available on 2030S

#### System Configurations & Pricing:

(Add any applicable sales tax (VT) and shipping & handling)

68000 20Mhz Processor	List	Prepaid	Visa/MC
2000/220 - 2MB RAM, 20MBHD	- \$1,999	- \$1,899	- \$1,999
2000/240 - 2MB RAM, 40MBHD	- \$2,499	- \$2,349	- \$2,499
2000/460 - 4MB RAM, 60MBHD	- \$2,899	- \$2,709	- \$2,899

#### 68030 25MHz Processor Series E

2030E/440 - 4MB RAM, 40MBHD	- \$3,299	- \$2,640	- \$2,904
2030E/460 - 4MB RAM, 60MBHD	- \$3,499	- \$2,724	- \$2,997
2030E/480 - 4MB RAM, 80MBHD	- \$3,799	- \$2,949	- \$3,244
2030E/880 - 8MB RAM, 80MBHD	- \$4,099	- \$3,174	- \$3,492

#### 68030 33MHz Processor Series S

2030S/440 - 4MB RAM, 40MBHD	- \$3,899	- \$2,924	- \$3,217
2030S/460 - 4MB RAM, 60MBHD	- \$4,099	- \$3,174	- \$3,492
2030S/480 - 4MB RAM, 80MBHD	- \$4,299	- \$3,324	- \$3,657
2030S/840 - 8MB RAM, 40MBHD	- \$4,199	- \$3,249	- \$3,574
2030S/860 - 8MB RAM, 60MBHD	- \$4,399	- \$3,399	- \$3,739
2030S/880 - 8MB RAM, 80MBHD	- \$4,599	- \$3,549	- \$3,904

#### Accessories and Options:

Deluxe Carrying case \$89

Extra Universal Power Supply \$109

Extra Battery \$99

68881/2 Math coprocessor \$149

Other Configurations available on request.  
Prices & specifications subject to change.

Mountain Micro-Computer Consulting, Inc.  
Riddle Pond Road  
West Topsham, VT 05086  
(802) 439-6463 Fax

#ENDCARD  
#TAG C7S13P1.pct  
#CARD  
Chapter 7...  
Sponsors

Earth Keeping Ad

#ENDCARD  
#TAG  
#CARD  
Chapter 7...

Warning!

This machine is subject to breakdowns during periods of critical need.

A special circuit in the machine called a 'critical detector' senses the operator's emotional state in terms of how desperate he or she is to use the machine. The 'critical detector' then creates a malfunction proportional to the desperation of the operator. Threatening the machine with violence only aggravates the situation. Likewise, attempts to use another machine may cause it to also malfunction. They belong to the same union. Keep cool and say nice things to the machine. Nothing else seems to work.

Never let anything mechanical know you are in a hurry.

#ENDCARD  
#CARD  
Chapter 7...

-How We Did It. . . (The Book)

This book, Flash Compendium 1992, and the newsletter, The Flash, are produced using Macintosh computers with System 6.07 and 7.0 networked together with EasyShare. Articles are composed and edited in the Notebook module of Paradise Market, the Electronic Notebook, and Microsoft Word. Outside contributors sent their articles in by paper copy, fax, disk (Mac & PC 3.5"), and e-Mail

(CompuServe, InterNet, Genie, and direct modem link). Adobe Illustrator and PhotoShop were used to create the line art, logo, and many of the illustrations.

Clipart came from MMCC, the Clip Art Network, 3G Graphics, and our own internal staff. The photos were scanned on a Microtek 600ZS scanner and then adjusted for offset printing using PhotoShop. Tables and calculations were prepared in Excel and RSG.

ReadySetGo 5.10 was used for all layout. Headlines are in Bookman Demi and Palatino was used predominantly for the text. Proofs were made on a LaserWriter Plus and the final photoready mechanicals were typeset at 600dpi at 130% using a LaserWriter Plus with a Xante A106 Accel-A-Writer upgrade. The Linocopy on page 113 was typeset at WordGraphics in Stowe, Vermont on their Linotronic 300.

All copy was printed with BlackLightning remanufactured cartridges using Hi-Res toner and then photo-reduced to create the printing plates. It was then offset printed at Capital City Press in Berlin, Vermont, on Torchglow recycled paper with soy based ink to produce what you are reading. Proofs and large format subscriber's copies of The Flash are perfect bound using desktop binding system from Avery.

Paradise Market, our business management system, containing all of our 23,000 customer records, selects Flash recipients, sorts the addresses for bulk mailing and prints them with your customer code in the top line. When The Flash returns from the printer, we have a bulk mail party with the local kids and label the tens of thousands of Flashes, preparing them for the Post Office's Third Class bulk mail.

It's a long way each quarter from conception to you...

How We did it... (The CD-ROM)

The CD-ROM was generated from the original text and art supplied from BlackLightning to Wayzata Technology. The text was combined and indexed with TextWare (PC and Macintosh). The illustrations were converted to PICT and PCX formats using PhotoShop, Hijaak, and Image Alchemy. The layout of the CD-ROM was devised and a One-OFF (premaster) was made using a RomMaker One-OFF system. Packaging and Disc art was made using PageMaker and FreeHand. The final CD-ROM was then sent to production and assembled for distribution.

#ENDCARD

#CARD

Chapter 7...

BlackLightning was formed in 1987

as we began developing the technology to remanufacture laser printer and photocopier toner cartridges. Our initial endeavor was motivated by both the appalling waste of throwing away cartridges

and a quest for a blacker, sharper, laser printer output. The original cartridges were for internal use at MMCC, Inc, but soon local demand convinced us to offer the product to others. During the following year, the BlackLightning product line grew and sales expanded nationally. Late in 1988, BlackLightning was spun off as a separate company, dedicated to remanufacturing toner cartridges used in a wide range of printers. Our research staff strives to improve our products, develop ecologically sound technologies, save our customers money and provide superior quality.

In late 1989, we introduced our heat transfer toners for laser printers. This is a product we had had in the labs for several years. This opened up an entirely new market with a higher quality product than previously available in the sublimation industry. In 1990, BlackLightning acquired and absorbed ITA, a research firm dedicated to developing toners. The acquisition expanded our research and development capabilities. Recently we have brought to market six colors of print toner, our hi-resolution toner cartridges for the new generation of hi-res printers, and many other innovative products.

BlackLightning continued to grow in leaps and bounds. Our customer base has skyrocketed from less than 10,000 in 1989 to over 23,000 in 1992! To match the wider range of customer needs, we now offer many related supplies in addition to our remanufactured cartridges. Within the company, we are integrating a new software system called Paradise Market to assist with shipping, receiving, purchasing and sales. Paradise Market allows us to better serve you by keeping costs down while providing more rapid responses to your queries and orders. Eventually this system will also help automate information and order taking via the phones. We are very pleased with its initial performance. You will surely be hearing more about this later.

We consider the long-range implications of what we do. Our products recycle materials which would otherwise contribute to the worldwide solid waste problems. We use materials made in the USA wherever possible. Employees participate in decisions regarding company growth and direction; we all earn stock, and thus own a share of what we are creating. Being employee-owned, we take extra pride in the quality of the products and services we provide.

BlackLightning is experience, expertise, and dependability. Our goal is to provide the highest quality and innovation at the greatest possible savings.

#ENDCARD

#CARD

Chapter 7...

Contacting BlackLightning

You can reach us at the following addresses:



BlackLightning      FAX:      (802) 439-6463  
Riddle Pond Rd      CompuServe: [73130, 1734]  
W Topsham, VT      Phone: 1-800-252-2599  
05086      (802) 439-6462

When you call, our computerized phone system, Marvin, will answer. Twenty-four hours a day, Marvin can provide you with a wealth of information and assistance including product descriptions and pricing, requests for literature, orders, taking messages, or transferring you to an available technical support or sales person during normal office hours (9am - 5pm EST).

If you are using a touch-tone phone you can interrupt Marvin at any time to make a selection by pressing a key on your phone. If you call in on a phone that can be switched from pulse to touch tone, just switch it to touch-tone when Marvin answers. If you have a phone that uses pulses to dial, stay on the line and Marvin will transfer you to a person during office hours and voice mail after hours. Marvin is designed to help you. Over the next several months Marvin will be learning how to take orders, check your order and account status, product inventories, and more. We invite your feedback on how we can improve Marvin and our services.

Basic Marvin Functions:

At almost any time you can press:

- 8 for help on using Marvin
- 9 for voice mail to leave a message
- 0 to reach a person during office hours and
- 1 for Sales' extension
- 2 for Tech Support
- 3 for Holly
- 4 for John
- 5 for Walter

You can press 0 and the extension as soon as Marvin answers the phone to be transferred. ie. 01 for Sales.

You can also get product pricing, descriptions, and other information by following the menus.

In the future we plan for Marvin to be able to understand rotary telephones, and eventually speech. Let us know what you like and dislike so that Marvin can grow to serve you better.

#ENDCARD

#TAG

#CARD

Chapter 7...

The Flash is a newsletter published by BlackLightning, Inc of West Topsham, Vermont. Originally The Flash was designed to educate our customers about our products. Over the years The Flash grew to cover much more and reach a wider audience. People other than BlackLightning customers asked for subscriptions, other vendors

asked to be able to advertise in The Flash, and the range of topics covered broadened until The Flash became what it is today. The Flash is an eclectic newsletter, bringing together many topics of interest including: laser printers & copiers; the environment; businesses; new laws affecting the consumer, computer use, and mail order purchases; technical background on laser printers; tips on running a small business and more. The common thread through it all is the revolution in American business enabled by personal computers & laser printers.

The Flash typically runs about 50 pages and is sent to 18,000 people. Based on surveys we think there are ~70,000 readers because Flash readers pass it around to friends and associates.

Articles from The Flash are typically available for reprint in other newsletters and magazines. Articles which first appeared here have now been printed in over 156 other publications! If you are interested in reprinting an article from The Flash, contact Walter Jeffries at BlackLightning at fax number (802) 439-6463.

Interested in writing for The Flash? Have ideas you would like to share? Contact us at the above address. The Flash also accepts a limited amount of advertizing each issue. For a media kit call the 800 number above.

We never release our mailing list to other vendors, but a limited amount of advertising space is available in The Flash as both display ads and classifieds. See page 227 for more details and fax us if you would like a media kit.

#ENDCARD

#CARD

Chapter 7...

### Subscribing to The Flash

BlackLightning customers in the USA receive a subscription to The Flash with their first order of the year. If you are outside the USA, or do not buy BlackLightning products and wish to assure yourself of receiving The Flash, you may order a subscription. Please enclose a check for \$15US for international subscriptions and \$10US for USA subscriptions to cover the costs of handling and First Class postage for international addresses. Photocopy & return to:

Flash Subscriptions, BlackLightning, Riddle Pond Road, West Topsham, VT 05086

Name\_\_\_\_\_

Phone (\_\_\_\_\_)\_\_\_\_\_

Company\_\_\_\_\_

FAX (\_\_\_\_\_)\_\_\_\_\_

Address\_\_\_\_\_

\_\_\_\_\_

City\_\_\_\_\_ State\_\_\_\_\_ Zip\_\_\_\_\_

Country\_\_\_\_\_

o LARGE FORMAT USA (\$25)      o Regular USA (\$10)

o LARGE FORMAT International (\$45)      o Regular International(\$15)

As a service to our readers The Flash is also available in a perfect bound large format version (8.5"x11") on a yearly subscription basis.

#ENDCARD

#CARD

Chapter 7...

## Resources

ALL PAGE NUMBERS HERE REFER TO THE PRINTED BOOK VERSION OF THE Flash Compendium 1992, first edition, July 1992.

Company	Reader Response Number		Page
3G Graphics	21	109	
Adobe Systems	42	97	
Alysis Software	37	127	
Avery/Dennison	45	97, 69	
Baumwell Graphics	18	193	
Bear Rock Technologies	61	89	
BlackLightning Black & Color Print Toners	1	214	
BlackLightning Products	2	212-223	
BlackLightning Transfer Services	4	218-219	
BlackLightning Transfer Toners	5	216-217	
Clip Art Network	29,50	117, 222	
CompuLabel	62	89	
DynaArt Design	19	193	
DynaBit USA	47	97, 51	
EarthKeeping Magazine	58	229	
Flash Advertising	56	227	
Front Porch Computers	36, 51	127, 223	
GDT Softworks	22	109	
Golden Triangle Computers	41	127	
Grantham's Polly Stamp	54	226	
Home Power Magazine	55	226	
HP Letter from The Flash	63	205	
Ibico	46	97, 69	
Library Educational Institute	23	109	
MacConnection	24	109	
Magic Software	34	127	
Manhattan Graphics	44	75, 97	

MicroMaps	26	109		
MicroTek Labs	25	109		
Midnight Engineering Magazine			53	225
Mountain Micro - Portable Computers			57	228
Olduvai	38	127		
OverPriced Software		28	117	
Panasonic	35	127		
Parity Software		42	127	
Rhetorex	40	127		
Salient Software		33	127	
Social Software- Perfect Calligraphy			59	230
Sugar Mountain Sweets - Maple Syrup			52	224
Symantec	39	127		
TeraNetics	32	127		
Virgina Systems		43	97	
Xante Corp	27	97, 109, 117		

The above companies produce products that were covered in this book on the mentioned page numbers. For more information about their products, contact them directly, or circle the appropriate Reader Response number on the enclosed postcard, or fax or write us with your name & address, and the appropriate Reader Response Numbers.

Flash Compendium '92, Riddle Pond Road, West Topsham, VT 05086

- Fax (802) 439-6463

#ENDCARD